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The Independent Commodore Magazine

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Graphics — special issue

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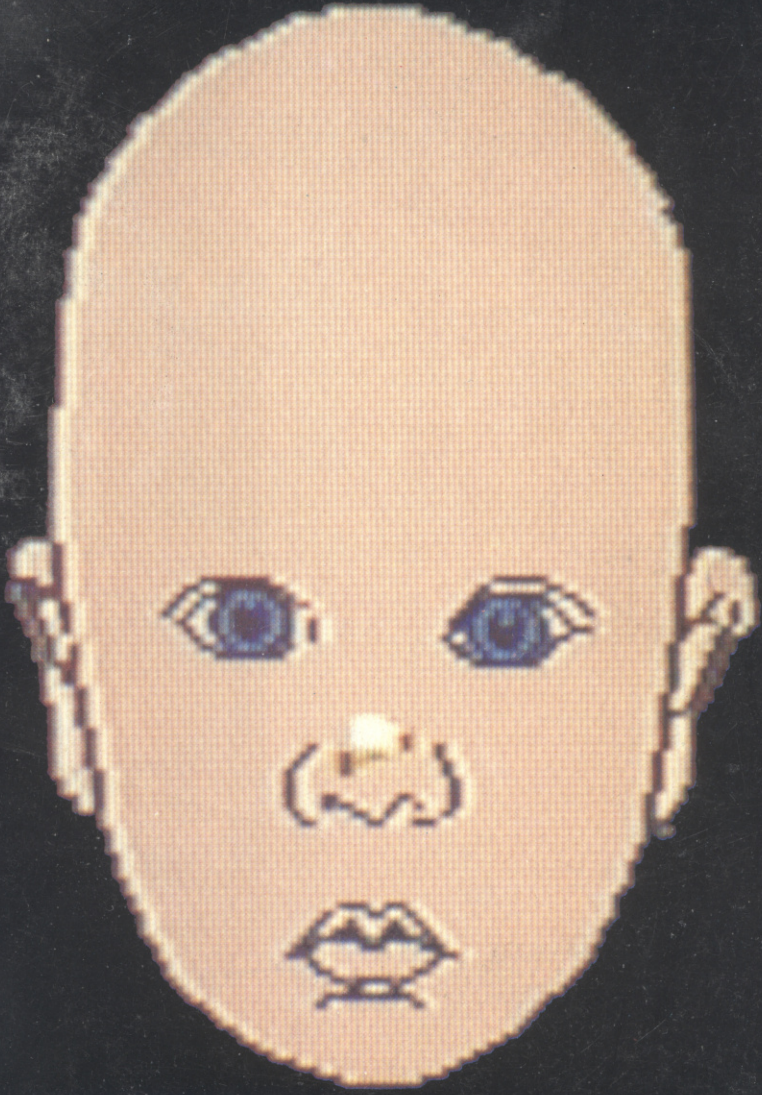

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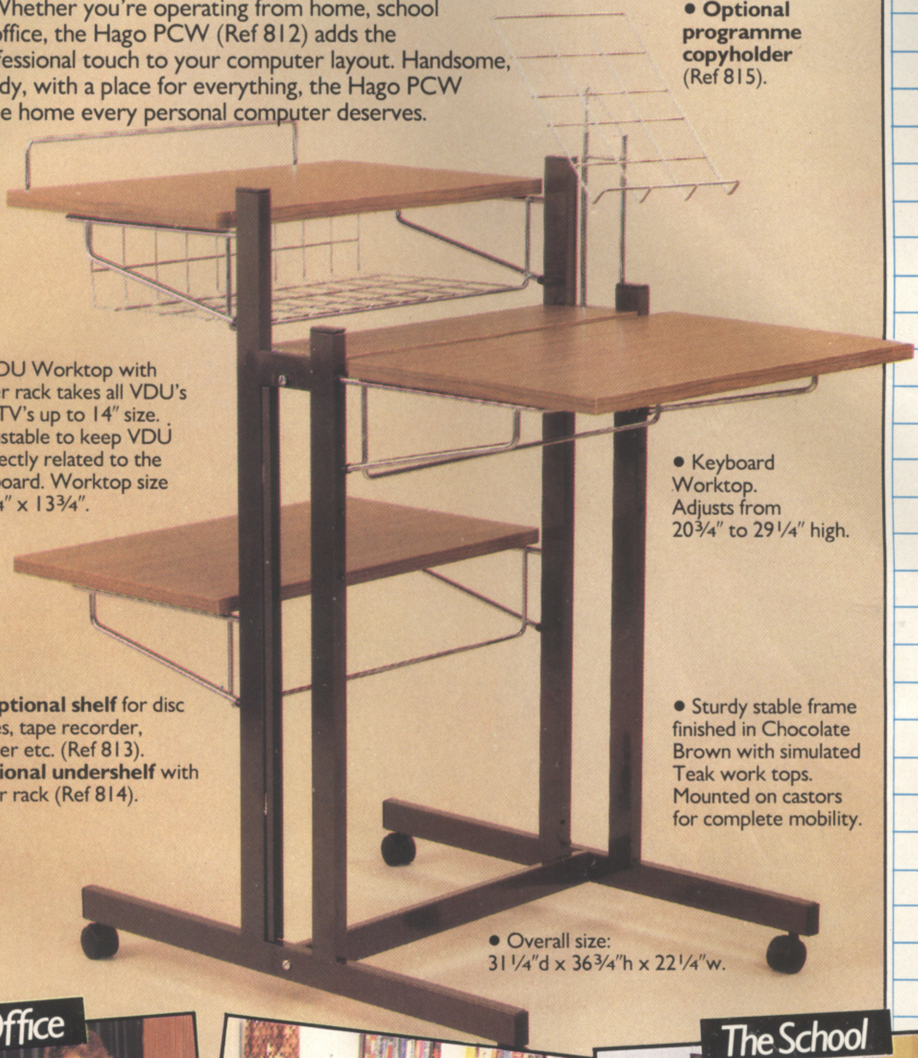

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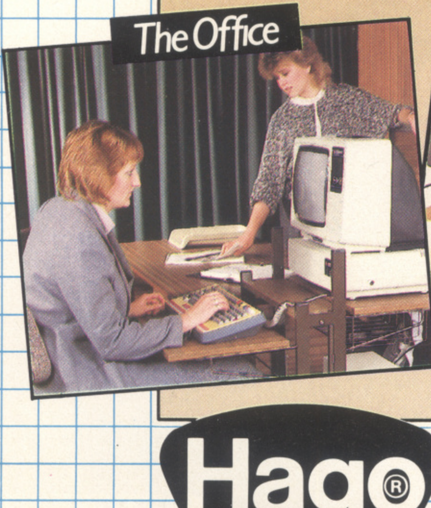

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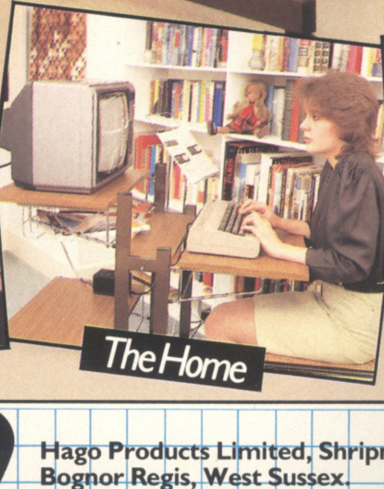

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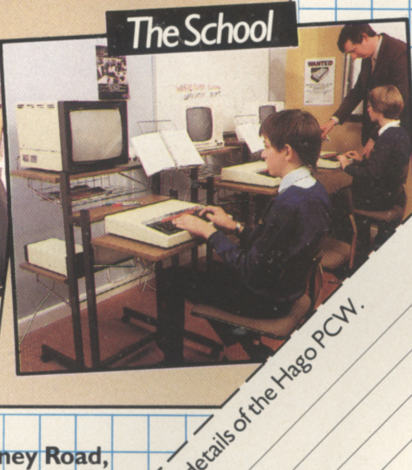

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COMMODORE
COMPUTING INTERNATIONAL

SEPTEMBER 1984

COVER STORY

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Commodore's Art Challenge achieved spectacular results. See inside for our exclusive coverage of this international competition.

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Following on from this month's special graphics issue our theme for October is sound, featuring an explanation on how to produce background music for your programs and a survey of available speech synthesisers.

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For further information or advice on the major break-through for Commodore business users, phone Simon McCarthy on 01-328 7145 or write to him at the address below.

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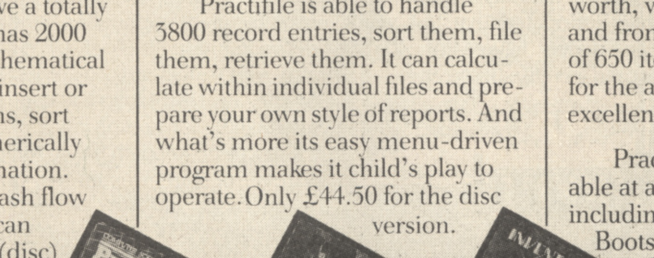
Practicorp's software is available at all good computer stores, including selected branches of Boots, W.H. Smith and Menzies. Clip the coupon for details of your nearest stockist.



Please send me details of your Commodore 64 programs.

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Production at Corby underway

The production line is getting under way at the Commodore's new Corby factory, although the official opening is not until Autumn when the VIP, yet unannounced cuts the red ribbon.

The factory has already cost Commodore over £20 million and covers 200,000 square feet. It will eventually have the capacity to produce 3,500 computers a month, but in the initial stages just 2,000 computers – a combination of Plus/4, C16 and 64's – will be manufactured each month.

Commodore hope to have enough of their new machines to cater for the anticipated Christmas demand. A variety of peripherals and software will also be made in the factory, but Commodore's branch in Braunschweig, West Germany will still be responsible for the 8000 series and a number of other products.

Most of the staff have moved up to Corby from Slough, although John Baxter, Marketing Director for Commodore (UK) is expected to depart in the near future. As yet, no replacement has been announced.

There are no plans for the Slough factory and it will eventually cease production.

Charitable computing

A computerised Tombola charity stall has raised £2000 for the Sick Childrens Trust 'Home from Home' appeal.

The idea was conceived by Bob Barton of Romik Software and Fiona Anderson, Organiser of the Commodore Show. The stalls were held at the Commodore Computer Show and Computer Fair.

Exhibitors donated blank cassettes, games, books, joysticks, computers – Commodore Computing International donating a large number of back issues.

Patrick Moore and Radio Luxembourg DJ Dave Eastwood helped to attract large crowds and the money raised will go towards providing accommodation for parents of seriously ill children attending the Hospital for Sick Children at Great Ormond Street and St Bartholomew's.

And in a similar vein – strenuous endurance feats such as Banana gobbling, Welly throwing and Egg hurling events featured significantly in the Wickes Associates alternative to the Los Angeles Games – the Waiward Olympics.

The event, held recently at the Thames Ditton Sports and Squash Club, attracted more than 85 clients and journalists, raising more than £400 for the Dedisham School for Autistic Children.

Commodore postpone show

Commodore's cancellation of the Leeds Show was due to two factors according to Aileen Bradley, Commodore's Retail Marketing Manager.

She explained that as Commodore are moving to their Corby offices in September "a great many staff and resources will be tied up during the month" and so they would be without "a full complement" of staff to help with the show.

In addition, Commodore expect to be extremely busy during the run up to Christmas with production of the new 16 and Plus/4 computers.

15,200 people attended the Commodore Show held earlier this year although Commodore had anticipated that last year's attendence figures of 40,000 would increase this year.

Marks and software

Marks and Spencer are venturing into software and hope to have a selection of titles on the shelves before Christmas.

Adrian Shire, senior selector, told us that they would initially be stocking a number of game titles as well as educational and utility programs for the Spectrum.

If the experiment works well, titles for the 64 will be added to the range. Since the project is still in the early stages, Adrian Shire felt it would be imprudent to give us any more details, but watch this space!

Contact: Marks and Spencer, 40 Bowling Green, London EC1. Tel: 01 935 4422.

Record UK sales

Following news of Commodore's record worldwide sales, we can now report that their UK sales contributed substantially to this record.

UK sales topped the £100 million mark during the last financial year. Howard Stanworth, General Manager, comments: "It confirms that, in revenue terms, we are still the undisputed leader in the British home computer market."

FAST fight for change

FAST, the Federation Against Software Theft, has gained the support of the majority of leading companies and trade associations.

Launched earlier this year to fight software piracy, FAST plan to achieve legislative changes in the Copyright Act so that more criminal remedies are available for software copiers. In effect, the changes should add more penalties to those existing for the manufacture, importation and distribution of pirate copies. FAST also plan to increase awareness of the legal protection already available under existing law.

The Rt Hon Kenneth Baker, MP, Minister of State, Department of Trade and Industry warmly welcomes FASTs' ideas. He says: "The software industry is a very important and quickly growing sector of the British economy. It is already a major contributor to national wealth and employment in this country and it is essential that it should be in a position to protect itself against unlawful copying". He also says that he "would like to assure FAST of my support and encouragement for their valuable efforts in this area."

Contact: FAST, Chancery House, Chancery Lane, London WC2.

Commodore's bronze

Commodore sold enough machines last year (1983) to achieve a third position in the 1984 BIS-Pedder Annual Census of Information Processing.

Their market share rose from 3.6% in 1982 to 6.3% in 1983, a total rise of about £80 million.

Contact: BIS Applied Systems, York House, 199 Westminster Bridge Road, London SE1.

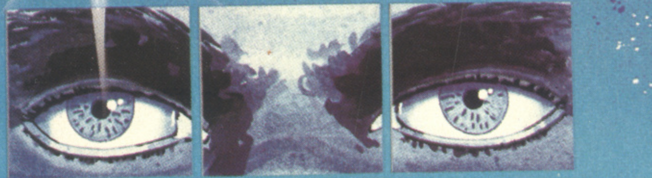
Dealer of the year

The Commodore dealership of the year has been won by the Birmingham-based Camden Computers.

To qualify for this title, Camden Computers sold more than £800,000 worth of Commodore equipment before the year ending June 1984.

Camden Computers was formed in 1971 and has been a Commodore Approved Dealer since the mid '70s. They have over 1000 user-bases ranging from Cornwall to Scotland.

We've got the TALENT



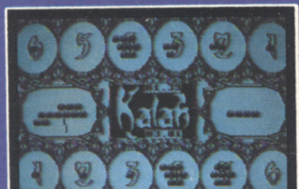
and our games prove it!

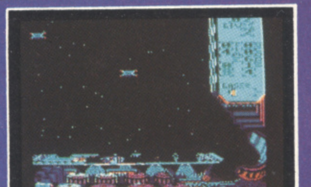
Amazing graphics, fast and furious action, challenging strategy, compelling adventure – this first wave of games from TALENT has got the lot!

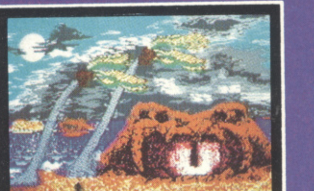
Written by professional computer scientists using powerful new programming techniques (which leave machine code standing), these games have pushed home micros to the very limit.

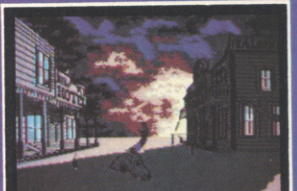
Kalah

ARCHIPELAGO









KALAH

One of the oldest games in the world! Originally played by Bedouins using pebbles and holes scooped in the desert sand, this strategy game has absorbed the mind of man for thousands of years. Superb graphics and music, with a choice of levels and depth of search. Easy to learn, fiendishly difficult to beat!

Commodore 64 Cassette £7.95 Disk £9.95

COMMODORE CASSETTES ARE *'FAST LOAD'*

LASER REFLEX

A new angle in alien zapping! Against a brilliant backdrop of stars, you must defend your asteroid base from wave after wave of swooping mutating starships. Your defence – a powerful laser deflected against a giant mirror. How long can you hold out before your defences crumble?

BBC Model B Cassette £7.95
Electron Cassette £7.95

COMMODORE SOFTWARE WILL SHORTLY BE AVAILABLE ON COMPUNET

ARCHIPELAGO

Dare you venture into the ancient undersea labyrinths which link the islands of the Archipelago? Fabulous jewels await you there – but the guardians of the treasure mark your every move, waiting to deal a swift and terrible vengeance. How long can you survive?

A fast-moving, action-packed game with brilliant graphics, animation and music.

Commodore 64 Cassette £7.95 Disk £9.95
(joystick needed)

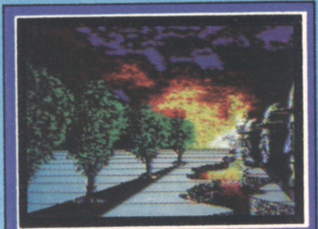
WEST

A compulsive adventure game set in a ghost town in the Wild West. Your task – to flush out a gang of bank roobers and retrieve their loot – with only your trusty steed and your six-shooter to aid you!

Test the speed of your draw, your skill at cards, your powers of survival!

The first of a stunning series of adventure games from Allan Black, played in real-time.

Commodore 64 Cassette £9.95 Disk £12.95
BBC Model 'B' (text only) Cassette £7.95
Electron (text only) Cassette £7.95



PANORAMA (H)

An outstanding graphics package for the Commodore 64. Features include: free-hand sketches, circles, ellipses, block move, copy and reverse, magnification choice of cursor, joystick or key control. PLUS texture definition and texture and colour fill. PANORAMA (H) uses the full colour facilities of the Commdore 64.

Commodore 64 Cassette £17.95 Disk £19.95

The programme is menu-driven and comes with a comprehensive illustrated instruction booklet.

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SOFTWARE FROM SCOTLAND

Talent games should shortly be available from your local software retailer – or post off the coupon now.

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ARCHIPELAGO	—	Cassette	(£ 7.95)	☐
ARCHIPELAGO	—	Disk	(£ 9.95)	☐
KALAH	—	Cassette	(£ 7.95)	☐
KALAH	—	Disk	(£ 9.95)	☐
WEST	—	Cassette	(£ 9.95)	☐
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BBC MODEL B	Quantity			
LASER REFLEX	—	Cassette	(£ 7.95)	☐
WEST (text only)	—	Cassette	(£ 7.95)	☐
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LASER REFLEX	—	Cassette	(£ 7.95)	☐
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Commodore technicolour d

We are pleased to be able to share with our readers our exclusive coverage of Commodore's Internationa announcing the results Sue Pearce talks to so

Producing a work of art using a computer may still seem futuristic to some, but watercolour and oil painting were declared equally innovative in their time.

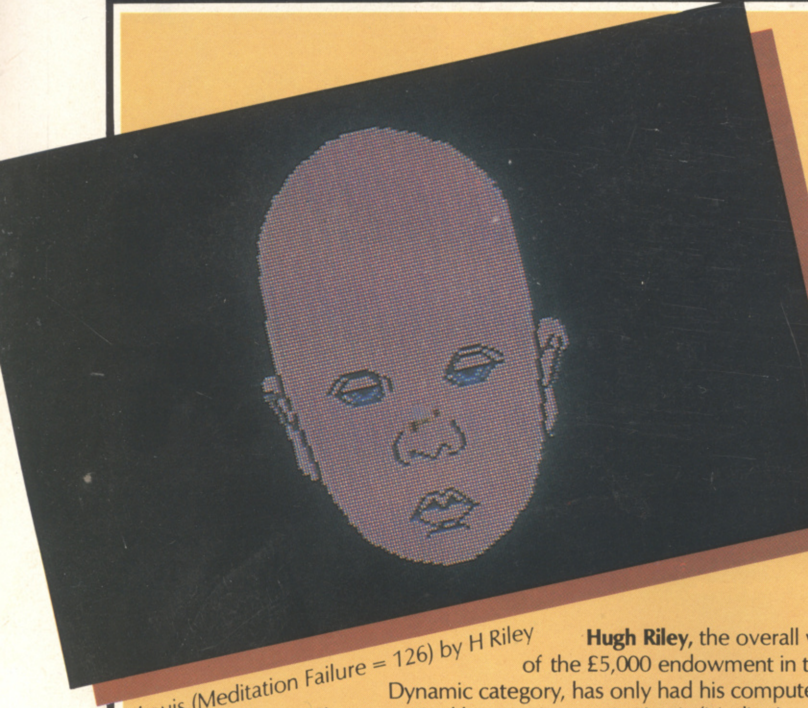
Commodore's International Art Challenge has brought to the public's attention the possibility of micro technology in image making.

The aim of the challenge was to open up an unexplored area to home computer owners and to demonstrate that new technology can be visually and artistically exciting as well as indispensable for use in education and solving practical problems.

Incentives to enter included a £5,000 endowment towards enabling the overall winner to study computer art at the establishment of his, or her, choice anywhere in the world in addition to thousands of pounds worth of Commodore equipment to be won.

The first art challenge of its kind, it stimulated a favourable response. Two hundred entries were received – perhaps not as many as expected, but the timing of the challenge meant that many potential competitors were under pressure from school exams.

Entries were judged for technical as well as artistic excellence by a panel of judges which included Professor Brian Allison, world president of the International Society for



Louis (Meditation Failure = 126) by H Riley

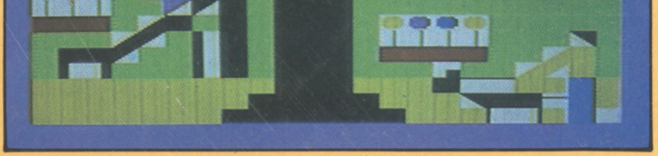
Hugh Riley, the overall winner of the £5,000 endowment in the 18+ Dynamic category, has only had his computer since Christmas. And his winning entries Louis (Meditation Failure = 126) and Obsessiveness were his first attempt at this kind of programming. A simple, yet extremely effective entry, Louis shows the face of a baby, his eyes following the path of a fly. Don't blink or you'll miss its grand finale – as the fly lands on Louis' nose, out flicks a long red tongue and gobbles it up! Slightly reminiscent of the mutant baby in the wonderfully awful TV epic 'V'.

Hugh Riley explains where his ideas came from. "The idea called for a face. It's actually the face of my son taken from a photograph. I suppose the idea for the fly had just been buzzing around my head." GROAN!

"The programs are complex within their simple limits," continues Hugh. "The Commodore allows you to move sprites, but you still have to define the blocks of pixels to be moved."

I didn't have the opportunity to see Hugh's other entry, Obsessiveness, which involves the repitition of the word Obsessiveness.

"The screen was 40 characters wide," commments Hugh. "Therefore I needed a word 13 characters long – Obsessiveness was the obvious choice."



The Park by R Hadland

Nine-year-old **Richard Hadland** produced a striking mosaic-type picture of a park which earned him first prize in the Under 12 Still category.

Richard uses a computer at school, but programmed his entry on his Dad's VIC 20, which he has been experimenting with on and off for about a year.

Art is a subject Richard enjoys and he has tried his hand at computer graphics before. He says: "My Dad told me about the competition. I thought that I could make a tree and I decided to make it a park with a friend and a slide."

It took Richard just three hours to produce his entry, with perhaps just the tiniest bit of help from his Dad with the actual program. He's planning to invest in a 64 with part of his £1,500 prize money – I wonder if Dad will be allowed to use it?

re and its dreamscreens

reders some of the impressive winning entries in erntional Computer Art Challenge. In addition to ksto some of the entrants and Judges

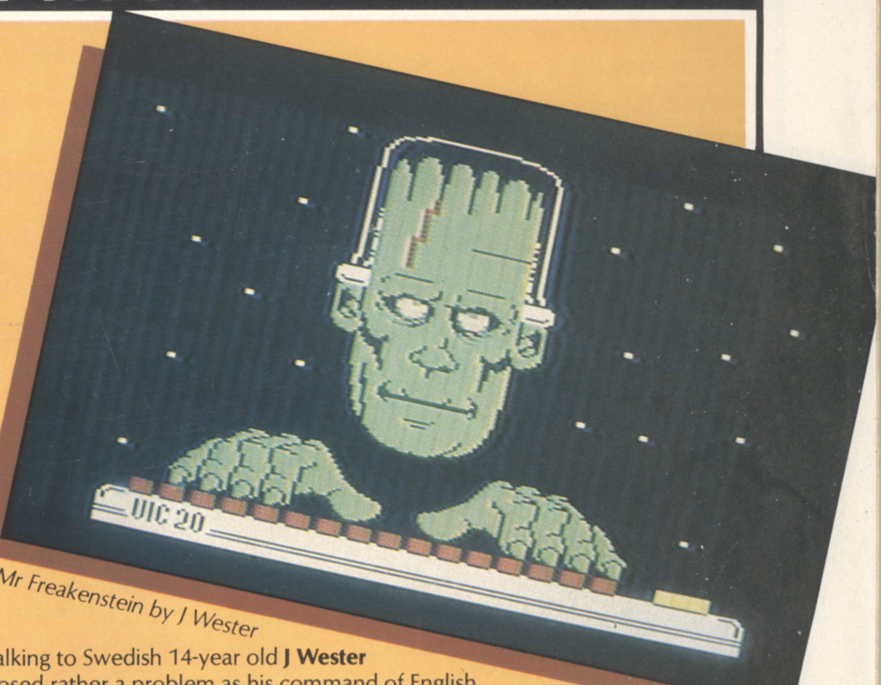
Education through Art, Commodore's marketing manager John Baxter, Paul Brown, editor of Page — the journal of the Computer Arts Society, and artist Tony Hart.

The winnng entries were on public display at London's Hamilton Gallery from September 3-5. Unfortunately we didn't have enough notice to announce this earlier.

I didn't envy the judges the task they performed in singling out the winning entries. At our photographic session I saw only a small sample of the entries and the standard was impressive. (I also don't envy the considerable hours put in by the judges waiting for each individual entry to be loaded — not that Commmodore ever encounter problems with their disk drives and cassette units. Cough! cough!)

My personal favourite has to be Mr Freakenstein which was voted the overall international winner. (I must have good taste after all!) A Swedish entry by 14-year-old J Wester, it shows Freakenstein at his VIC 20 keyboard, fingers moving up and down while the eyes blink and an evil sneer appears on his face.

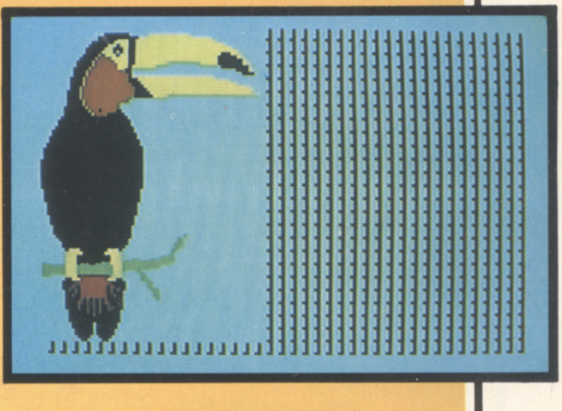
All of us here at CCI would like to add our congratulations to the winners. If you missed your chance to prove your artistic talents this time, don't worry. Commodore are planning to repeat the challenge next year.



Mr Freakenstein by J Wester

Talking to Swedish 14-year old **J Wester** posed rather a problem as his command of English was not sufficient to discuss his winning entry, Mr Freakenstein. However, it far surpassed my knowledge of the Swedish language! Due to this language problem I will also have to refer to him as Mr Wester as when I enquired about his first name, he replied: "I don't spell in English". Anyway, it is pronounced something like 'Yohanik'.

His entry, Mr Freakenstein, won him first prize in the 12-17 Dynamic category and gained him the title of International winner. Mr Freakenstein was actually the result of a misinterpretation. Mr Wester says: "My first thought was to do Einstein. My father thought I meant Frankenstein, so I decided to work on that idea. "It wasn't very easy," he continues, "But it also wasn't hard. It took two days to develop the idea and then I wrote a program so that I could generate my characters."

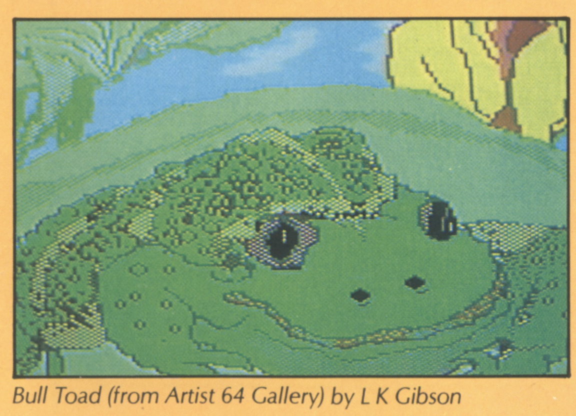


Toucan by M & A Kontowski

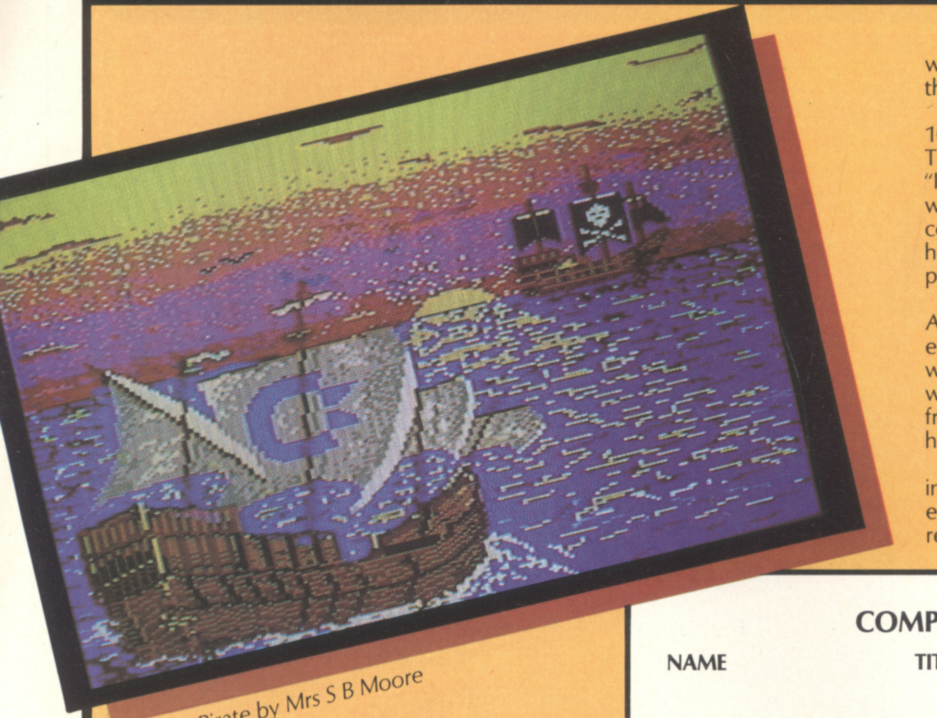
John Baxter, marketing manager of Commodore UK, feels that the Commodore International Computer Art Challenge has been a huge success. He comments: "The standard of entries was extremely high, especially considering that it was the first ever competition of this kind for home computer users, and that no extra add-on software was permitted in creating the graphics."

As part of the judging panel for his knowledge of the technical expertise of each entry, Baxter was involved in the difficult task of selecting the final winners. "It was a task which stimulated much discussion amongst the judges," says Baxter. Despite the number of outstanding entries, the judges were unanimous in their decisions.

Baxter confirms: "Louis (Meditation Failure = 126) was immediately obvious as our overall winner. It stood out head and shoulders above the rest particularly for its high degree of originality and creativity. It also exemplified the excellent standards of technical expertise in the blinking eye which, although appearing to be a simple movement, does in fact require great skill to achieve.



Bull Toad (from Artist 64 Gallery) by L K Gibson



Catch A Pirate by Mrs S B Moore

"Mr Freakenstein was another clear winner," he continues. "It demonstrated probably the highest level of excellent and accurate imagery I have seen performed on a VIC 20 with no memory expansion at all."

Baxter concludes: "The Commodore International Art Challenge has shown that Commodore's home computers have capabilities in fields which are only now beginning to be explored – even the youngest of children are capable of using their computers to create what we believe will be the art of the future."

Professor Brian Allison, world president of the International Society for Education through Art, was concerned mainly with the educational value of the competition.

He says: "I was encouraged by the number of demonstrations of computer usage in art and design activity in schools. It showed the potential of young people to use the computer in an aesthetic way and adds to the range of techniques available to artists for expressive purposes."

The Knight and the Sprite by J Delaney

Allison confirmed that the standard of entries was high and expressed his delight in the fact that entries were received from women.

"I was particularly taken by an entry from a 10-year-old girl," comments Allison, referring to The Knight and the Sprite by Joanne Delaney. "It was a lovely poem and the image making was good too." According to Allison, school computers tend to be hogged by the boys and he feels that these results will encourage more participation from girls.

In any future competitions of this nature, Allison would like to see a category for school entries. He says: "Given the time of the year when the challenge was set up, 15-18 year olds were all involved in exams. Many were away from school, so a computer was required at home.

"The timing didn't allow teachers to become involved. With a category for school entries, an educational venture could be fitted into the regular school program."

COMPETITION RESULTS

NAME	TITLE	PRIZE (£'s worth of Commodore equipment)
(Under 12 Still)		
1st R Hadland	The Park	1,500
2nd N Lynn	Reach For The sky	1,000
3rd J Charlesworth	3 Program Pictures	700
(Under 12 Dynamic)		
1st J Delaney	The Knight and the Sprite	1,500
2nd M Van Nguyen	Disaster	1,000
(12-17 Still)		
1st E Williams	Lakeside	1,500
2nd R Ansdell	Haunted House	1,000
3rd M & A Kontowski	Toucan	700
(12-17 Dynamic)		
1st G W Ross	E.T. 64	1,500
2nd R Kingham	Can-Can	1,000
3rd P Hancock & P Randall	Rollerball	700
(18+ Still)		
1st L K Gibson	Artist 64 Gallery	1,500
2nd S B Moore	Catch A Pirate	1,000
3rd M E Buckner	Elvira	700
(18+ Dynamic)		
1st H Riley	Louis (Mediatation Failure = 126 and Obsessiveness)	1,500
2nd P Bartholomew	Olympics 84	1,000
3rd B Saunderson	Spirits (Ghosts)	700

The overall winner of the £5,000 endowment was H Riley in the 18+ Dynamic category, for Louis (Meditation Failure = 126) and Obsessiveness.

The overall international winner was J Webster of Sweden in the 12-17 Dynamic category for Mr Freakenstein. He wins £1,500 worth of Commodore equipment.

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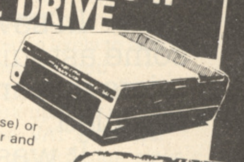

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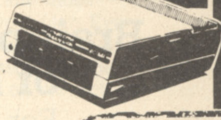

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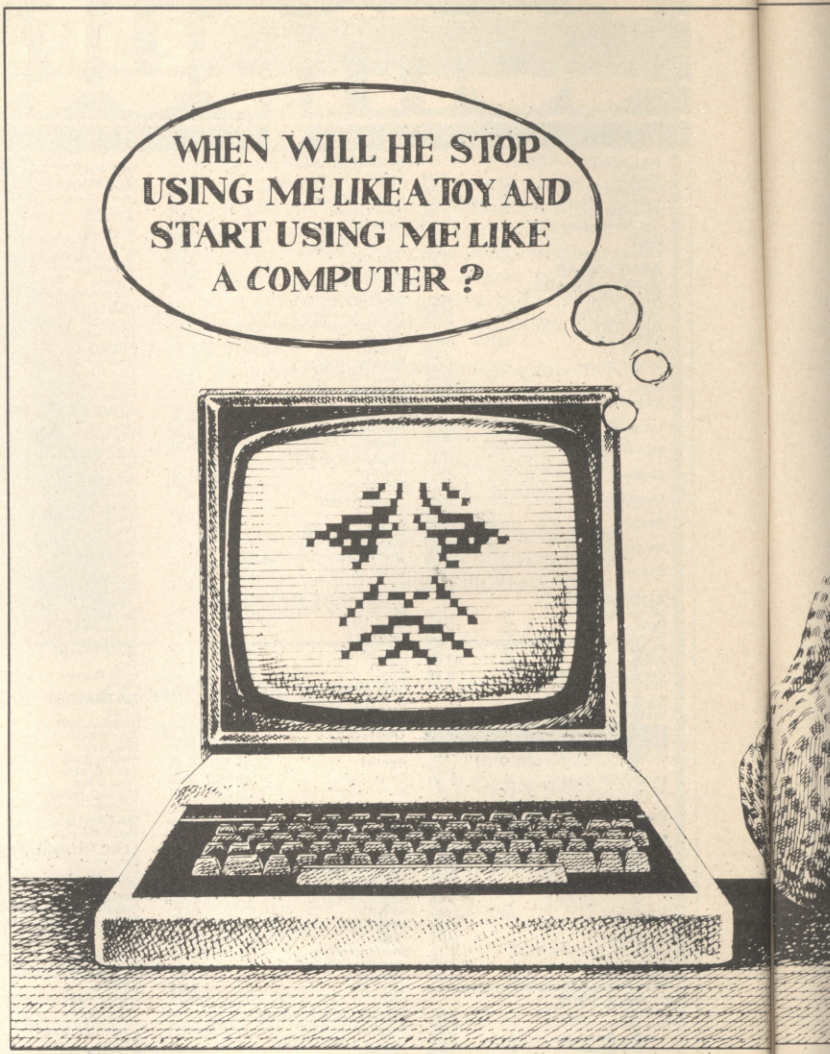
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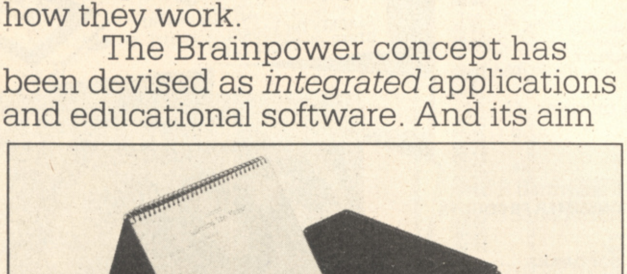

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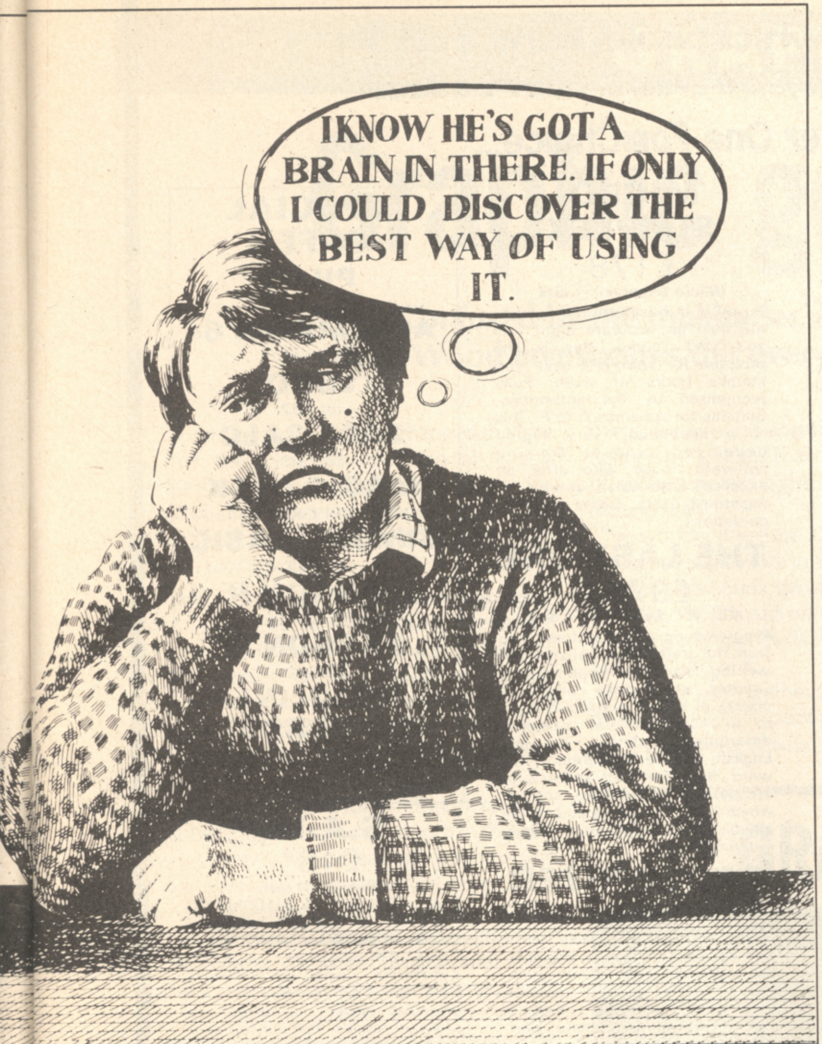
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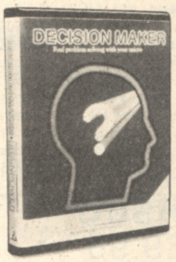

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MICRO ASSEMBLER

£55

(Supersoft) — cartridge

Best of the lot. If you're into machine code — or working that way — this is the one to get or save your pennies for. Features 3-pass assembler, unlimited labels, source files can be linked, monitor, full screen editor, disk or tape operation. Plus AUTO, DELETE, FORMAT, FIND, NUMBER, DISASSEMBLE, OUT and TABLE. Monitor has standard TIM commands plus hunt, transfer and disassemble.

HS-64 ASSEMBLER

£55

(JCL Software) — cartridge

Combines the features of a powerful assembler with a number of toolkit programming features. An ideal program development aid. Includes AUTO line numbering, FIND string, CHANGE string, DELETE line range, TYPE to inspect or print a file without loading it into memory, GET source text files, PUT outputs source files to disk, DO executes first line, LIST source file, RENUMber lines, JOIN program files, SCROLL multiple viewing facility, CBM code selection, ASCII code selection, RBAS reset, SIZE of file and start/end load address, SETBRK and CLRBRK to insert and remove

KOALAPAD

£80*

(Koala Tech Corp) — inc cartridge

Touch tablets you can use not only for creating spectacular graphics, but also for musical, LOGO and educational uses. Comes complete with KoalaPaint cartridge which permits all those fantastic graphics facilities — commands include zoom, copy, colour swap, draw, lines, rays. Save pictures on disk and call these up from BASIC to use in your own programs! Programmer's Guide (disk £13) is useful. Logo Design Master (disk £30), Spelling I (disk £30), Colouring Series I — Geometric Designs (£25) are some of the other support programs available but it's easy to write your own.

MICRO-SIMPLEX

£178

(Micro Simplex) — disk

If you're in business and need to maintain an accurate audit trail and VAT record, this is the program for you! Will save you literally hours of work. Fully recognised by the authorities. Suitable for schemes A to F. This is a specialist, very highly developed product from a software house who offer an excellent after-sales service to registered users. Demo available on deposit.

THE LAST ONE

£97.50

(DJ 'A1' Systems) — disk

Programming aid that frees you from the graft if you're thinking of writing specific applications. Creates stand-alone error-free coding in standard BASIC. Input is in the form of one-line descriptions defining, in plain English, the user's intention. This word 'flowchart' act as basis of computer's questioning session which leads. Programs you create can be for any application. Highly recommended.

CODEWRITER

£85

(Dynatech) — disks

Database design system like TLO. Easier to work with but marginally less powerful. Disk 1 features data entry generator, disk 2 carries report and menu generator. Very flexible.

SUPERBASE 64

£88.00

(Precision) — disk

Really excellent database generator, still at our special price. All things considered, we think this one's the best of its type and a must for all serious Commodore 64 users. Can be used for anything from mailing lists to stock control and invoicing. Lets you tailor the database to your exact requirements. Differs from program generators such as TLO and CodeWriter in that the systems menus and core program are always the same. But Superbase is not less the powerful for that — in fact it has database features and facilities beyond the needs of mere mortal folk! Now with STEPPING STONES program modules at £10 each including Job Costing/Estimating, Sales & Purchase Daybooks, Cashbook, Stock Records.

FLIGHT SIMULATOR II

£40*/£33

(Sublogic) — disk/tape

This is so good the authors think you can learn 'the ropes' as far as instrument control and flying are concerned. Accepting the limitations on the graphics side — nevertheless outstanding in terms of personal computers — the simulation is quite excellent. Expensive but it's the best one for the 64 by far . . .

SPECIAL OFFER

PILOT

(d) £38

ASSEMBLER 64

(d) £45

LOGO

(d) £57

EASY CALC

(r) £40

MAGIC DESK

(r) £40

SIMONS BASIC

(r) £45

SARGON II

(d/c) £17.50

SARGON II

(d) £40

DEADLINE
STARCROSS
SUSPENDED

(d) £27.50

S.A.M.

£48*

(Tronix) — disk

This is SOFTWARE AUTOMATIC MOUTH, a quite outstanding piece of software which gives your 64 limitless speech synthesis capability. Offers English text-to-speech or phonetic input, in direct or program modes. Full control over pitch, speed, inflexion. There really isn't anything like it, even on hardware!

COLOSSUS CHESS

£9.95

(CDS) — cassette

This is the best of the chess programs available for the 64. Cursor controlled piece movement. Turn by turn move listing and assessment. Multi levels of play. Game replay feature. A must if only to learn to play chess!

BOOKS

There are some 60 or so books specifically about the Commodore 64. We have a full list (50p) with a description of each. Included in the list are many other books of interest to Commodore 64 users. We can supply any book at cover price plus 50p each towards P&P.

ANATOMY OF THE 1541

£14.95

Really excellent book for those keen to get inside their 1541 disk unit. Absolutely everything you need to know — includes ROM listings, descriptions of 1541 use, use of programs such as COPYALL.

PRICES CORRECT AT TIME OF GOING TO PRESS. Let us quote you if you manage to find lower!! Items marked with an asterisk (*) are available at £5 less *while stocks last.*

Graphic generation

Confused by the multitudes of graphics aids available? Sally Wood investigates this ever increasing sector of the market

Computer graphics have changed the face of the film industry. Special effects created with the aid of computers have made possible cinematic extravaganzas such as Star Wars, Tron and Return of the Jedi all multi million blockbusters.

Imaging techniques have also made significant changes to scientific research procedures. Computer graphics can be used in the design of new drugs, in genetic engineering, for improving and interpreting images sent back by space satellites and even for the examination of bone structures before surgery.

The potential uses for computer graphics must be enormous and no doubt in the next few years they will increasingly become part of our everyday lives. However, science and film entertainment apart, what about down to earth personal computer use of graphics?

The average computer programmer is not going to start designing graphic programs to plot the path of particles in nuclear energy research, nor is he going to start creating the special effects for the latest Spielberg film.

What he or she will be doing, is to utilise the myriads of proliferating graphic packages for applications such as business, education, remedial teaching, in personal programs and even for the aesthetic pleasure of designing amazingly clever pictures for contests like the Commodore International Art Challenge, the winning entries of which are featured in this issue.

Lines, circles, shapes, close ups, plotting lines, up to fifty colours (achieved by combining Commodores 16 colours), squares, filling in of shapes, different textures can all be used in creating graphic images on the television or monitor screens either using the preprogrammed graphics programs or programming your own using the utilities which add extra graphics commands to BASIC.

Most of the packages are for the 64 and this bias is due to the incredible graphics potential of that computer. It has five graphic modes altogether. Two of these, the high resolution bit mapped graphics and multicolour text modes, can be mixed with text.

Normal text, extended background colour text and multicolour bit mapped graphics mode are the other three modes and using these, foreground and backgrounds can be defined on screen. There are also four layers of animation and eight sprite layers to play around with!

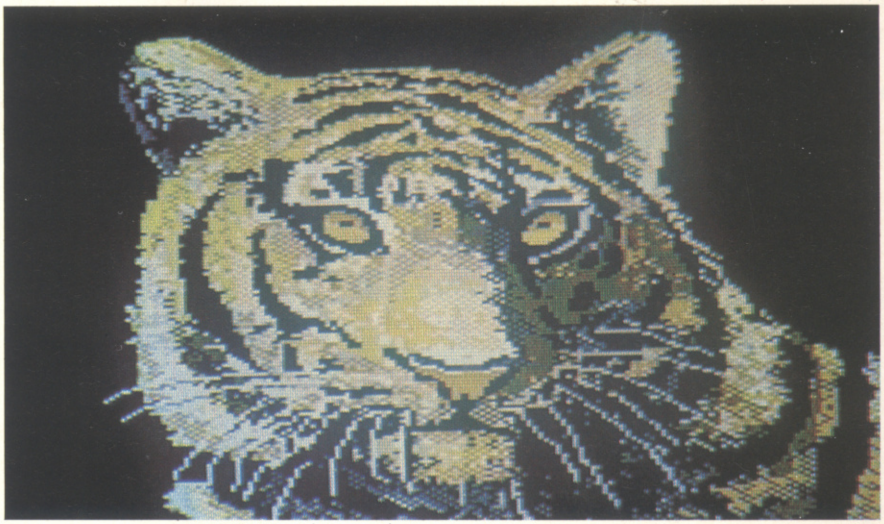
No wonder there are such brilliant graphics in 64 games like Alice in Videoland and Aztec Challenge by Audiogenic or Loco by Alligata. Even the VIC 20 has a relatively good graphics capacity and games like Pharoahs Curse by Hesware prove it.

We have put together a list of a selection of available graphics packages which will give you a good idea of what is available.

It is not possible to categorise the packages as each one concentrates on different aspects of computer graphics. Some require peripherals such as graphics boards, light pens and joysticks.

There is much room for development and improvements in the field of computer graphics and so it will undoubtably become even more exciting than it is already. We hope that your creative interest has been stimulated – creating and designing graphical imaes on a computer will, undoubtably, produce pleasing results.

GRAPHICS TABLETS



Audiogenic's Koalapad was used to produce the above picture of a tiger

PEACOCK COLOUR SYSTEM

This graphic board provides an eight-colour graphics facility for the 64 and VIC 20 although it uses a RS 232 interface and will require a suitable interface. Code sequences are used to control direct cursor positioning and vector drawing. Graphics and text can be mixed on the two separately controlled screens. Unit comes complete with enclosure power supply, colour card and flying cables and costs £850.

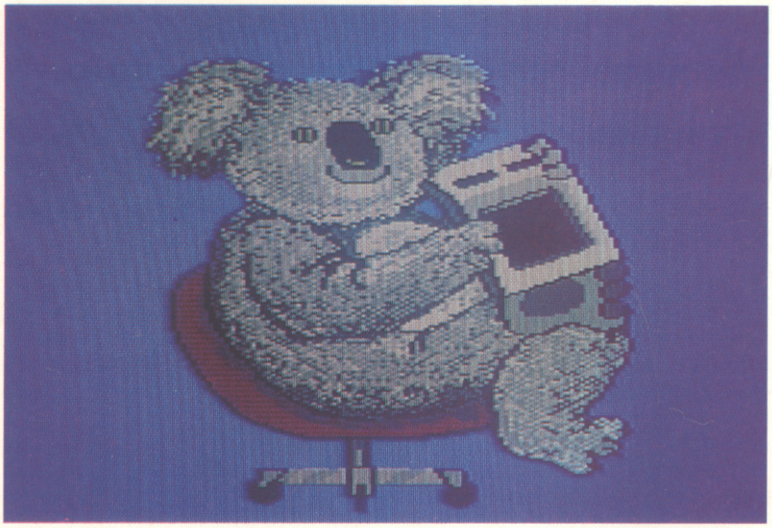
Contact: IJJ Imports, 1 Cardigan Road, Marlborough, Wilts. Tel: 0672 52818.

STROBE GRAPHICS SYSTEM

Raw complex data can be transformed into bar and pie charts, curves or isometrics in a variety of colours with the Strobe 100 graphics plotter and software package. The plotter costs £299 and the software is aimed at the Commodore 8032 and the 4040 disk drive. An intelligent serial box is available and costs £162. The 64 or VIC 20 will need a parallel interface to operate with the plotter.

Contact: Data Efficiency, Finway Road, Hemel Hempstead. Tel: 0442 60155.

GRAPHICS



KOALAPAINTER

High resolution graphics can be designed on screen using the Koala Pad touch tablet and accompanying graphics program. Commands include drawing lines, framing, circles, manipulating objects on screen, enlargement and any pictures created can be utilised in personal programs. Complete package for the 64 retails at £89.95.

Contact: Audiogenic, PO Box, Reading, Berks. Tel: 0734 664646.

GRAFPAD

The digitising tablet plus the pen can be used with various graphics programs such to create high resolution graphics. Software will enable the user to design pictures, trace the outlines of pictures or graphs and do free hand drawings in a choice of red, green or blue colours. The pad is for the 64 costs £125.

Contact: British Micro, Penfold Works, Imperial Way, Watford, Herts. Tel: 0923 48222.

LIGHTPENS

DATAPEN

Two drawing programs plus an introductory program accompany this lightpen which can be used to design programs as well as pictures. With the Colour-Draw program, pictures can be created using any of the Commodore characters and colours and, by utilising the Hi-Res draw, programs can be used to invent high resolution graphics using several drawing styles. The package costs £25 and is 64 compatible.

Contact: Datapen Microtechnology Ltd, Kingclere Road, Overton, Hants. Tel: 0256 770488.

PIXSTIK
FOR VIC 20
COMMODORE 64
BBC MODEL B
ATARI 400, 600 XL
ATARI 800 OR 800 XL
The Electronic Paintbox and Cartoon Set
COMPLETE MULTIPACK
PIXSTIK

PIXSTIK

With the aid of a lightpen and paintbox software, Pixstik can be used to design graphics on screen. Features include 16 colours, four Stik Modes, various line and shape modes which can be finished in various styles; block, speckled or filled in. Graphics can also be animated. Retails at £29.95 for the 64 and includes a lightpen and software.

Contact: Computapix Ltd, Gores Road, Kirkby Industrial Estate, Liverpool. Tel: 051 547 2741.

GRAPHIC UTILITIES

ACOS+
COMMODORE 64
Melbourne House Publishers

ACOS+

This utility program makes the 64's unique capabilities available to anyone through a collection of 36 advanced BASIC commands. Graphic features included in the program are simplified sprite movements, sprite collision detection and graphic commands. Available on cassette for £8.95.

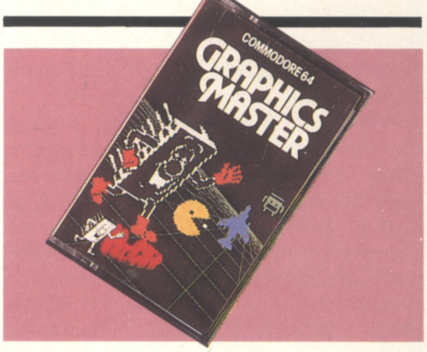
Contact: Melbourne House, Castle Yard House, Castle Yard, Richmond. Tel: 01-940 6064.

GRAPHIX IV

A Machine Code utility adding 16 graphic commands to Commodore 64 BASIC. The commands enable High Resolution Graphics and user-defined characters to be accessed easily from Basic. Features include split screen option, mixed text and graphics facility plus plot, draw, paint and colour commands. Available on cassette for £9.95.

Contact: Zipprint, 96 Bournemouth Road, Parkstone, Poole, Dorset. Tel: 0202 737000.

INSTRUCTION MANUAL INCLUDED
GRAPHIX IV
ALL MACHINE CODE UTILITY PROGRAM ON CASSETTE
BY MATTHEW BURT
© ZIPPRINT 1984
16 EXTRA BASIC COMMANDS
FOR THE
COMMODORE 64
ENABLES HIGH RESOLUTION GRAPHICS TO BE ACCESSED EASILY FROM BASIC IN BOTH DIRECT AND PROGRAM MODES. FEATURES INCLUDE SPLIT SCREEN OPTION (HIGH RESOLUTION WITH TEXT 'WINDOW'), MIXED TEXT AND GRAPHICS FACILITY AND REDEFINABLE CHARACTER SET UTILITY. COMMANDS INCLUDE PLOT, DRAW, PAINT, COLOUR, PUT etc.


COMMODORE 64
GRAPHICS MASTER

GRAPHICS MASTER

Both user and defined characters and sprites can be created at the same time and then saved onto tape or disk. Commands include edit functions, character scrolling, inverting and character rotations. Graphics Master is for the 64 and sold on cassette for £7.50.

Contact: Mr Chip Software, Dept CC, 9 Caroline Road, Llandudno, Gweynedd. Tel: 0492 79026.

BUSINESS SOFTWARE FOR 8032/8096 AND 64

Payroll £99.50 + VAT

Hourly, weekly and monthly basic, seven rates for overtime or piecework, 4 pre-tax adjustments including pension and SSP, 6 after tax adjustments, NI and all tax codes for use with printed pay slips or plain paper. This payroll can be adjusted by the user when tax rates change.

Integrated accounts from £299.50 + VAT

Purchase ledger, aged creditors, sales ledger, invoicing on forms to the user's own design, statements, aged debtors etc. Daybooks, VAT analysis, stock control, automatic posting to the nominal ledger with manual override. Nominal journals, trial balance, audit trail, management reports, profit and loss and balance sheet.

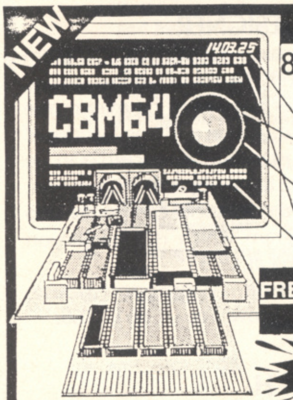
Final accounts £60 + VAT

Nominal ledger system with complete audit trail, 200 nominal accounts on 1541 disk, 700 on 8050/8250 disk, 22 reports including profit & loss and balance sheet.

Electronic Aids (Tewkesbury) Ltd

Send 13x9 S.A.E with 53p p&p for further details, the above software is available on 21 days approval.

12 Drysdale Close, Wickhamford,
Evesham, Worcestershire WR11 6RZ
Telephone 0386 831020



PRODUCTS for the CBM64!

80-COLUMN/ GRAFICCARD

- Digital clock
- Mixpossibility of 80-column screen with Hires CBM64-screen (also in colour)
- Grafic pictures; can be switched to background
- Upper line can be locked (for comments)
- Adjustable line spacing for greater clarity on text screens

FREE ADDED!: wordprocessor + calculation program

82.50

★ Warning: Beware of (inferior) imitations of ZERO-products!

PRODUCTS for the VIC20!

NEW

- 32 kBytes
- switchable
- cased
- low power consumption
- goldplated connector
- unbeatable price

39.95

finally! 32 kB Rampack switchable! from ZERO!

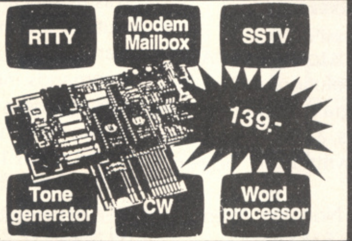
HOME- AND BUSINESS SOFTWARE AVAILABLE FOR RAM- AND COLUMN CARD!

●COM-IN 64
communications interface!

ZERO's COM-IN 64 communications interface turns your Commodore 64 Personal Computer into an advanced (radio) communications terminal for BAUDOT, MORSE, ASCII, SSTV, Wordprocessor, Modem and Tone generator.

Plug in the interface, switch on your Commodore and the system is in operation! Over sixty commands are recognised by the COM-IN 64 program to ensure maximum operation convenience.

In the 70 page user manual you'll find the complete 2 program listings for QHT locator and LOGBOOK.

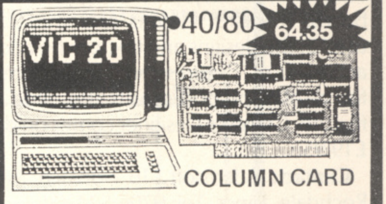


●64 k RAM + 2 k EPROM

- Simply plugs into the expansion port
- Professional quality p.c. board with gold-plated connector
- 2 K EPROM socket
- 28159 BYTES FREE!
- All 8 K blocks are deselectable
- 31743 BYTES with 40/80 card
- 31232 BYTES 'hidden' memory
- On-board software in EPROM enables you to use all the file handling commands (OPEN, CLOSE, PRINT, INPUT, GET, SAVE and LOAD) with the 31232 BYTES 'hidden' memory

73.50

Just imagine...
less than one second to save 28 K bytes!



●40/80 COLUMN CARD

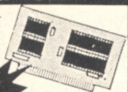
64.35

Turn your VIC 20 into a professional computer
40 or 80 columns instead of 22, very sharp and stable picture.

both CBM64&VIC20

●EPROM CARD
- two 2k/4 k EPROM sockets.
- Addresses are changeable.

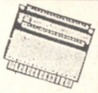
9.15



both CBM64&VIC20

● EXPANSION UNIT
with 2 slots

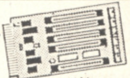
9.15



both CBM64&VIC20

●EXPANSION UNIT
With 5 slots, fully buffered, switches for deselecting slots, and on-board power supply

VIC 20 34.45 ✳ CBM64 42.50



other ZERO products:
- ●Printerbuffers, RS232 & centr.
- ●Epromcopiers.
- ●More is coming.......

UNIVERSAL COMPUTER PRODUCTS

● EPROM PROGRAMMER
for 2716, 2732, 2764, 27128, 2532 EPROMS
This programmer can be very easily connected to almost any microcomputer, e.g.:
OSI xP, PET, CBM, TRS 80, EXIDY, SWTPC, EXORCISER, NASCOM, MAXBOARD, AMICOS, ACORN ATOM, VIC 20, APPLE, JUNIOR, SYM, DAI, AIM, EXPLORER, HEATHKIT, ZX 81, ABC and CBM 64.

Control software in EPROM £ 6.50

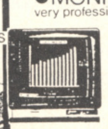
35.95

●EPROM-ERASER
erases 4 EPROMS simultaneously

29.95

●MONITOR
very professional, 12"

74.95



when purchasing also a 80-card: 69.95

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015

GRAPHICS

ROLF HARRIS PICTURE BUILDER

Pictures have to be built up in block from using either the standard Commodore character set on the 64 or a set of specially designed characters. Sixteen colours can be utilised and shapes can be multiplied, replaced and used in personal programs using a joystick. The program is on cassette for the 64.

Contact: Commodore International, 675 Ajax Avenue, Slough, Berks. Tel: 0753 73638.

VIDEO BASIC

This package can be used by software developers to create, among other things, high resolution, multicolour, sprite and turtle graphics aon the 64. The memory can manage multiple graphic screens and there are game features for sprite collisions, lightpens and joysticks. This development package comes on disk for £42.

Contact: Adamsoft, 18 Norwich Avenue, Rochdale, Lancs. Tel: 0706 524304.

CADPAK

A lightpen based tool for computer aided designs and drawings. High resolution graphics can be completed on two screens. Commands include freehand drawings, rays, boxes, circles and copying areas of screen to other areas. Text can be inserted and intricate detailed objects such as electronic circuitry can be defined and printed. Available on disk for the 64, the package costs £35.

Contact: Adamsoft, 18 Norwich Avenue, Rochdale, Lancs. Tel: 0706 524304.

GRAPHICS DESIGNER

Design package for the 64 capable of producing high resolution graphics on screen by using a keyboard, joystick or lightpen. Circles, boxes, triangles, ellipses and lines can be used in the designs and text can be added to any pictures. Pictures can also be combined for display purposes with the Slide Show feature. Graphics Designer comes on disk for £19.95.

Contact: Adamsoft, 18 Norwich Avenue, Rochdale, Lancs. Tel: 0706 524304.

GRAPHIX 64

A Machine Code utility with over 20 hi-res commands enabling points to be erased or plotted, lines drawn or areas on screen to be filled or erased. Text characters can be erased and a text window allows standard and high resolution screens to be displayed simultaneously. Sold on either cassette or disk for £11.50 and £13.50 respectively.

Contact: Supersoft, Winchester House, Canning Road, Harrow. Tel: 01 861 1166.

BC BASIC

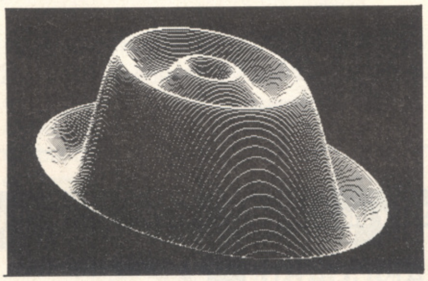
Commands and functions have been added to the BASIC language in BC Basic to enable both novice and advanced programmers to utilise the four main graphic levels on the 64. These are standard characters, user-defined characters, high resolution characters and sprites. Retails on cartridge for £57.50.

Contact: Kuma Computers, 12 Horseshoe Park, Pangbourne, Berks. Tel: 07357 4335.

ULTRABASIC 64

Adds 50 powerful commands to Commodore BASIC including high resolution, multicolour and turtle graphics, dots, freehand drawing, circles, boxes, rotations, sprites. Retails at £14.95 and £19.95 for cassettes and disks respectively.

Contact: Adamsoft, 18 Norwich Avenue, Rochdale, Lancs. Tel: 0706 5244304.



GO SPRITE

With Go-Sprite, the 64's sprite capabilities can be used. Up to 32 sprites can be drawn on the screen and then moved around, coloured with any of the 16 colours, overlapped, copied and enlarged. Joysticks, lightpens or the keyboard can be used to control the cursor. All sprites created can be animated. It costs £10 on cassette.

Contact: Mirrorsoft, Holborn Circus, London EC1. Tel: 01 353 0246.

SCREEN GRAPHICS

Adds 20 graphic commands to the 64's BASIC including sprites, high resolution and multicolour graphics. The program also contains Machine language routines, a demonstration program and a tutor written in Screen Graphics 64 BASIC.

Contact: Adamsoft, 18 Norwich Avenue, Rochdale, Lancs. Tel: 0706 5244304.

PAINTPIC

Graphics program for the 64 with pen, brush and text painting modes. It utilises 16 colours, a number of shapes and blocks can be created and then copied, rotated or mirrored. Paintpic comes on cassette and costs £19.50.

Contact: Kuma Computers Ltd, 12 Horseshoe Park, Pangbourne, Berkshire. Tel: 07357 4335.

GRAPHICS EDITOR

The three Editor functions in this program help create user defined characters and sprites on the 64. The Character Editor redefines characters which can then be used by the Screen Editor to create pictures. Sprites can be designed with the Sprite Editor. A display window allows multiple sprite images to be composed and animated sequences to be seen. The cassette version is priced at £14.99.

Contact: Romik Software, 272 Argyll Avenue, Slough. Tel: 0753 71535.

TURTLE GRAPHICS

Turtle Graphics, for the VIC-20, is a computer language combining features of LOGO and PILOT. The 30 different commands include commands for colour, sound, motion, logical conditions, calculations, branching and subroutines. The user learns to program while painting pictures using the VIC 20's graphics and colour potential.

Contact: Hesware, Thomson House, 296 Farnborough Road, Farnborough, Hants. Tel: 0252 543333.

GRAPHICS DESIGNER

Written in Machine Code, this program enables character sets and sprites to be designed in either a standard bit map mode or a multicolour mode. In addition 'windows' consisting of 32 standard characters can be defined, enabling large objects to be drawn. Both keyboard and joysticks can be used to control the program which is available on cassette for the 64 at £9.95.

Contact: Supersoft, Winchester House, Canning Road, Harrow. Tel: 01 861 1166.

PANORAMA H

This utility can create pictures with high resolution graphics for use in personal programs. The cursor is joystick controlled and commands include plotting points, drawing lines, defining blocks of texture, enlargement and animation. Cassette and disk versions for the 64 cost £17.95 and £19.95 respectively.

Contact: Talent Computer Systems, The Curron Building, 101 St James Road, Glasgow. Tel: 041 552 2128.

TONY HART ART MASTER

Colourful line drawings can be created on screen using either a keyboard or joystick. Sixteen colours can be utilised on one screen and a second screen can be used to temporarily store pictures. Disk and cassette versions are available for the 64 and will cost around £11.

Contact: Commodore Internationa, 675 Ajax Avenue, Slough, Berks. Tel: 0753 73638.

COMMODORE 64 BASIC BEGINNER'S PACK . . .

A subtle blend of software and book to enliven the dullest of Commodore 64's.

The Software

Honey Aid 1: a complete utility that adds 28 new commands to Commodore 64 BASIC, in three groups.

- **Toolkit:** these commands help you to create your own programs in BASIC. One day you'll wonder how you did without them.
- **Graphics:** use colour and hires graphics with ease – decorate and colour your 64.
- **Synthesizer:** build all the SID chip's features into your program. No need for POKEs, just use Honey Aid's BASIC-like commands.

In addition – on the tape:

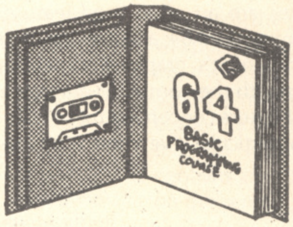
- **Char Gen:** a full-featured character generator that will redefine any or all of the standard 64 characters, even the ones used by Char Gen – while it runs.
- **Sprite Gen:** a sprite generator to define sprites – normal or enlarged, single colour or multicolour. Displays the sprite as it's defined. Transforms the design into DATA statements.
- **Composatune:** explores the SID chip. Allows you to type in a tune and to store this in DATA statements. Later, you can recover this to re-create the tune. Buildasound: lets you explore all the features of SID and hear them in action.
- **Guesser:** a unique computer-aided-simulation (CAL) of a number-guessing game. Demonstrates how each statement works and shows it all in action.
- **Hangman:** a full hangman game to provide entertainment and education.
- **Breakout:** a video ball game, break down the wall to score.
- **Blockade:** a two-player game, trap your opponent, they're trapped – you win.
- **Balltrap:** get the ball in the net to win – frustrating but fun!
- **plus, plus . . .**

The Book

A 360-page text that guides you step-by-step, through the 64's BASIC – learning as you go! Each piece of software on the tape (and many more) is developed stage-by-stage. Once the fundamentals of BASIC are mastered, the specialities of the 64 are introduced.

From a simple number-guessing game via a reaction-tester, a hangman game and three video games to character and sprite generators, the projects increase gradually in complexity. This unique approach ensures that you learn – and that learning is fun!

The Package



TOTAL PACK PRICE

£10.50 INC VAT P & P UK & EIRE

MAIL ORDER ONLY To: CMOS B1
291 CRICKLEWOOD LANE
LONDON NW2

ALSO AVAILABLE:

BASIC Packs @ £10.50

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A spritely interlude

It's welcome back to Pete Gerrard who has taken time off from writing his successful computer books and games to provide us with this insight into how collision detection with fellow sprites and data works

Sprites are an often used feature of the Commodore 64, and are one of the most powerful of it's graphical capabilities. Yet each month the computer magazines see a host of letters concerning these little beasts, and in particular everyone wants to know, and few seem to understand, how collision detection with both fellow sprites and data works.

For the purposes of this article, we might as well get a sprite on the screen, so the following short program will accomplish this for us.

```
SPRITE INVERTER


5 DIMSP(63).SD(63)
10 POKE53280.0:POKE53281.0:PRINT"SPRITE MOVER.":GO
SUB30000:GOSUB996
15 V=53248:POKEV+23.1:POKEV+29.1
20 POKEV+21.1:POKEV+1.120:POKEV.160
22 PRINT"PRESS 'D' TO INVERT THE SPRITE.":PRINT"PR
ESS 'U' TO NORMALISE IT AGAIN.
24 GETA$:IFA$="U"THEN34
25 IFA$<>"D"THEN24
32 FORI=0TO63:POKE832+I.SD(I):NEXT
33 GOTO24
34 FORI=0TO63:POKE832+I.SP(I):NEXT:GOTO24
996 FORI=0TO20:FORJ=0TO2
997 SD(I*3+J)=SP(60-(I*3)+J)
998 NEXTJ,I
999 SD(60)=SP(0):SD(61)=SP(1):SD(62)=SP(2):RETURN
30000 FORI=0TO63:READA:POKE832+I.A:SP(I)=A:NEXT:PO
KE2040,13:POKE53287.7:RETURN
30001 DATA0,127,0,1,255.192,3
30002 DATA255.224.3.231,224.7,217
30003 DATA240,7,223,240,7,217.240
30004 DATA3.231,224.3,255.224,3
30005 DATA255,224,2,255,160.1.127
```

```
30006 DATA64.1,62,64,0,190,128
30007 DATA0,156,128,0,73,0,0
30008 DATA73,0,0,62,0,0,62
30009 DATA0,0,62,0,0,28,0,0

READY.
```

Sprite Inverter

Before getting into the nitty gritty, let's see how this program works. It takes a sprite (any sprite) and inverts it's image on the screen. In other words, instead of having two lots of data for two different sprites, and invariably getting it slightly wrong, this program will turn one sprite on its head, and reverse it back again, at the touch of a key.

Explanation

Line 5 : Just set up a couple of arrays.

Line 10 : We'll have a black border and a black background, and just print up a simple message. You may care to clear the screen at this point, just to make things a bit more legible. Then, go to the subroutine starting at line 30000 to set up the sprite, and then go to the subroutine starting at line 996 to invert the sprite.

Line 15 : Set the variable V, and magnify the sprite in the X and Y directions.

Line 20 : Turn the sprite on, and give it an X co-ordinate of 160 and a Y co-ordinate of 120, which puts it in a fairly central spot on the screen.

Line 22 : Just a set of instructions.

Line 24 : Get a key press, and if that key is the 'U' one then go to line 34.

Line 25 : If the key isn't the 'D' one then return to line 24 and wait until either 'U' or 'D' is pressed.

Line 32 : We're inverting the sprite, so put all the data in the SD array into the 13th area of sprite data.

Line 33 : Bit obvious, this one.

Line 34 : We're turning the sprite the right way up again, so put all the data in the SD array into the 13th area of sprite data.

Line 996 : Start of two loops that performs the inversion.

Line 997 : Going in steps of three, take the bottom row of the original sprite, and put it in the top row of the inverted one. In other words, we're simply swopping data around in steps of three.

Line 998 : Carry on the loops.

Line 999 : Do the last three elements of the array the long way, and return from this routine.

Line 30000 : Read in the sprite data for the normal sprite, put it in the 13th block of sprite memory, and also put it into the array SP. Then, inform the computer where you've put the data, and turn it into a yellow sprite before returning from this routine.

The program works, is it's chief feature, and it does get a sprite on the screen.

Collision Detection

Provided that you've cleared the screen, that last program should have a sprite sitting serenely in the middle of it, touching neither sprite nor background data.

If we were now to PEEK registers 53278 and 53279 we would get a value of zero in each of them, for it is these two registers which determine which sprite has collided with what.

Location 53278 works in the following way:

Sprite Number	7	6	5	4	3	2	1	0
Value	128	64	32	16	8	4	2	1

If the location contains a zero, then there are no sprite to sprite collisions taking place. If the location contains a one, then sprite zero is involved, a two indicates a sprite one collision, and so on, until a value of 128 would indicate that sprite seven is involved. Of course, since this location detects sprite to sprite collisions, it would never contain a simple value as outlined above, since there must be at least two sprites together to register a collision in the first place.

So, if the value found from PEEKing that location was, say, 17, it would mean that sprites four and zero have collided. A value of 36 would indicate that sprites five and two have collided.

Multiple sprite collisions are also possible, so if the value of PEEK(53278) was found to be 41, then sprites five, three and zero are all involved. If the value is 255, then every sprite in the world is involved, and there'll be a grubby mass of sprites somewhere on the screen.

Or maybe not, since sprites can collide off screen as well, so watch out.

To illustrate this in action, add the following lines to your program:

```
16 POKE2041,13:POKE53288,5
23 PRINT"[HOME,8SP,HOME]"PEEK
(53278):PEEK(53279)
```

and alter the following lines as well:

```
15 V=53248:POKEV+23,3:POKEV+29,3
20 POKEV+21,3:POKEV+1,120:POKEV,160:
POKEV+3,110:POKEV+2,150
```

Running the program with these alterations will put a second sprite on the screen, touching the first one, and the value in location 53278 is now displayed in the top left hand corner of the screen. The value next to it is that for location 53279, which presently contains zero as there is no background data on the screen.

Collision: What collision?

So handling sprite to sprite collisions is quite straightforward. But what about sprite to data? Here we are not concerned with the value to be found in location 53279 other than being satisfied that it does not contain zero. As long as it holds some other value, then that serves to tell us that the sprite has collided with something.

Say we want to check for sprite zero. We know that the X and Y co-ordinates for sprite zero are held in locations 53248 and 53249 respectively. As soon as a sprite to data collision is detected, a PEEK of these locations will give us the X and Y co-ordinates for the sprite.

Say we get the values of one hundred and fifty for X and one hundred and twenty five for Y at the moment of collision. Divide X by eight and Y by eight to give us the new values of eighteen and fifteen respectively, after taking the INTeger part of the answer only. Multiplying the Y value by forty gives us a value of six hundred, and adding our X value of eighteen to this gives us a total of six hundred and eighteen.

Add this to the screen start value, which is usually one thousand and twenty four, and we arrive at a final total of 1642. Now, at least, if we type PEEK(1642) we can find out what was on the screen when the sprite hit it.

A complicated process maybe, but it works, and the following program shows this in action.

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All books written by Peter Gerrard, former editor of *Commodore Computing International*, author of two top-selling games for the Commodore 64, or by Kevin Bergin. Both are regular contributors to *Personal Computer News, Which Micro?, Popular Computing Weekly* and *Commodore Horizons*.

SPRITES & SOUND ON THE COMMODORE 64
by Peter Gerrard

A complete guide to using the extraordinary features of the Commodore 64, together with a full working explanation of the chips that make it possible: the 6581 Sound Interface Device and the 6566 Video Interface Chip, together with the processor that make it all tick, the 6510.

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This book is for anyone who has ever wondered how the Commodore 64 really works. Intended for the serious programmer, it includes fundamental memory maps, memory architecture maps, the disassembly itself and (for reference) the complete machine code instruction set.

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A complete look at the latest home computer from Commodore Business machines. Starting with a refresher course in Basic Programming, it moves on through machine code, before considering in great detail sprites, graphics and sound. A section on peripherals, and then the heart of the book: an in-depth look at the chips that make it work, including the 6581 Sound Interface Device and the 6566 Video Controller Chip, as well as the heart of the computer, the 6510. The comprehensive appendices cover the full Basic and Machine Code Instruction sets, as well as several useful reference tables, and a complete machine code assembler/disassembler listing.

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```
SPRITE COLLIDER


10 POKE53280.0:POKE53281.0:PRINT"[CLR.RVS.YEL]SPRI
TE COLLIDER.":GOSUB30000:A=35
15 V=53248:POKEV+23.0:POKEV+29.0:A$=CHR$(A)
20 POKEV+21,1:POKEV+1,120:POKEV.160:PRINT"[CLR]":G
OTO23
21 REM PUT PEEK(53279) ON SCREEN
22 PRINT"[HOME]          [HOME]":PEEK(53279):PRINT"[H
OME]          [HOME]":PEEK(53279):RETURN
23 FORJ=1TO3:PRINT"[HOME.9CD]
                    ":GOSUB22
24 FORI=1TO1000:NEXT
25 REM PUT UP CHARACTER A$
26 PRINT"[HOME,9CD,GRN]"::FORI=0TO38:PRINTA$::NEXT
:GOSUB22
27 FORI=1TO1000:NEXT
28 NEXTJ
30 X=PEEK(53248):Y=PEEK(53249):X=INT(X/8)-2:Y=INT(
Y/8)-6:Y=Y*40:REM ADJUSTMENT!
32 S=1024+X+Y:S=PEEK(S)
33 REM GET CO-ORDINATES AND PEEK THEM
34 PRINT"[2CD]YOU COLLIDED WITH CHARACTER # "S
36 PRINT"[CD]TO PROVE IT, LOOK AT THE TOP LEFT HAN
D  CORNER OF THE SCREEN."
37 FORI=1TO3000:NEXT
38 PRINT"[CLR]":POKE1024.S:POKE55296.5
39 REM POKE CHARACTER S ONTO SCREEN
40 FORI=1TO2000:NEXT
42 A=A+1:IFA>95THENA=33
43 A$=CHR$(A):REM UPDATE CHARACTER
44 GOTO20
30000 FORI=0TO63:READA:POKE832+I.A:NEXT:POKE2040.1
3:POKE53287.7:RETURN
30001 DATA0.127,0,1,255.192,3
30002 DATA255,224,3,231,224,7,217
30003 DATA240,7,223,240,7,217,240
30004 DATA3,231,224,3,255,224.3
30005 DATA255,224,2,255,160,1,127
30006 DATA64,1,62,64,0,190,128
30007 DATA0,156,128,0,73,0,0
30008 DATA73,0,0,62,0,0,62
30009 DATA0,0,62,0,0,28,0,0

READY.
```

Knowing all this, you can happily move sprites around all over the place, and find out what they're colliding with. May all your programs be spritely ones!

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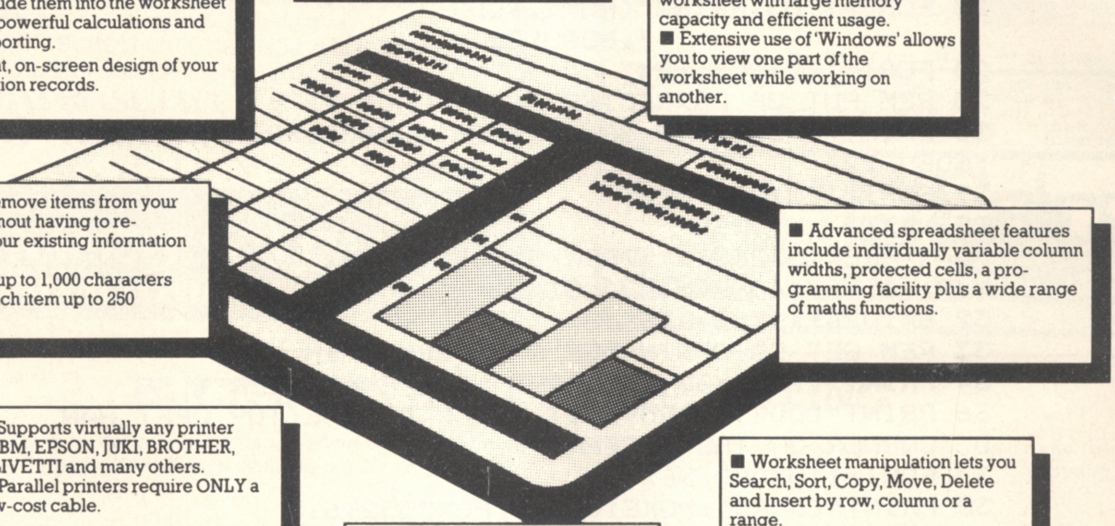

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THE COMPANION TO THE COMMODORE 64

Any book claiming to be a companion to the Commodore 64 Reference Guide, would have to be of outstanding quality to justify that claim. This book, as it happens, is.

Whereas the Commodore 64 Reference Guide concentrates on the more technical aspects of the 64, Keith Bowden has tried to emphasise the creative uses of the 64's excellent graphical and sound capabilities.

The book is a mine of information. Chapters are split up to deal with the 64's machinations: its 6510 memory organisations, sound and graphics capabilities, character and sprite animations and the relevance of raster interrupts.

If the Reference Guide has already gone into detail about certain aspects of the 64, Bowden does not waste his time covering the same ground. For instance in the chapter devoted to animation, he does not go into detail about sprites as they are already chronicled in the Reference Guide.

Bowden has taken care to include practical programming aids such as machine code interrupt routines which can be used to drive animated displays or for generating music and music interpreters to create background music (Magic Roundabout in this instance) while programming. BASIC version of routines are also included.

In addition three main BASIC programs are listed to reinforce the explanations of the SID and VIC II chips and their significance to the 64's sound and graphics facilities. A synthesiser program, enables the programmer to create sounds with the SID chip and the other two graphics programs enable bit-mapped pictures in both high resolution and multi colour to be designed.

The author has also reviewed some utilities, games and books that he considers helpful and has listed a number of 64 locations.

Bowden's obvious enthusiasm for the 64's potential overwhelms the reader. However the reams of information stuffed into the pages does sometimes cause the mind to wander. Fortunately it soon returns when yet another programming gem is discovered.

There is no doubt that any 64 owner keen to start inventing games or other programs on the 64 will find this book, together with the Commodore 64 Reference Guide, an invaluable aid. Well worth £5.95.

Contact: Pan Books Ltd (in association with Personal Computer News, Cavaye Place, London SW10.

THE ADVANCED 64 HANDBOOK

This book could be used as a small reference volume and dipped into when information on various aspects of the 64 are needed.

Information has been consigned to the numerous chapters in a methodical and uncomplicated way. If the reader is stuck on a particular aspect of the 64, for instance display interrups, the MPS 801 dot matrix printer, advanced disk operation with the 1541 disk drive or even finding out how to increase the 'user friendliness' of personal programs, he or she will find locating the relevant section easy. Another bonus is that the text is not filled with unnecessary waffle.

Peter Lupton and Frazer Robinson intend the handbook to be a companion guide to the "Commodore 64 Handbook", published by the same company, and assume that the reader will be familiar with BASIC. Their aim is to provide the reader with the opportunity to find out even more about the 64.

A large section of the book is devoted to machine code. It is a difficult language to understand, but since it is the 64's own language it is important to make the effort. The 6510 Microprocessor's architecture, the instruction set used and its various operational abilities are all explained.

Throughout the book, diagrams, program listings and programming sequences are used to reinforce and illustrate the text.

Other chapters in the book cover the various graphic modes of the 64 – standard and multi coloured bit mapped graphics, the VIC II chip and display interrupts plus the SID chip and methods of playing tunes with the synthesiser.

The authors have also included a number of appendices which the programmer may find invaluable, for instance error messages and their explanations, a summary of DOS commands, BASIC abbreviations, Kernal routines graphics loader programs and both SID and VIC II registers.

The authors have eliminated any unnecessary padding and although nothing is covered in extensive detail, no-one will mind that the book is not a totally authorative text, because it does convey, in a clear and concise fashion, what it is he or she wants to know. Detailed information can always be located somewhere else. The books usefulness justifies the price of £6.95.

Contact: Century Communications Ltd., 12-13 Greek Street, London W1.

THE COMMODORE 64 PUZZLE BOOK

We are told in the introduction that life is one long problem solving experience, a condition analagous to programming the computer. Both require solutions, but these are invariably arrived at by different means.

Brian Boyde Shaw assumes the reader has at least a minimum working knowledge of BASIC and poses over forty programming problems for the reader to solve with his 64.

They are not, as the title suggests, puzzles in the conventional sense – crosswords or general knowledge quizzes, but problems requiring solutions reached by using the computer.

The problems are divided into six sets and Boyde Shaw has graded them in order of complexity. The novice programmer can begin by learning relatively simple procedures with posers such as "Write a program to print your name on a completely clear screen" and then goes onto harder problems dealing with topics such as screen printing, string and other logical functions, basic games routines and the relationship of letters to numbers, using methods larned in earlier problems.

The final chapter deals with a mixture of topics including conversions and music, with one of the last problems asking the programmer to use the television screen as a digital clock displaying hours, minutes and seconds.

Boyde Shaw provides all the possible answers to the problems in the book and does his best to explain how he has arrived at them using both text and programs. The main BASIC language commands are listed in the first chapter, but any other commands that are necessary in problems are listed at the front of the relevant chapter. An aid reminiscent of early learning reading books, where all new words are listed!

Boyde Shaw emphasises that the book is not designed to teach anyone computer programming, but to develop the ability to think logically and solve problems.

Written in entertaining and uncomplicated prose, this book would be worth the £6.95 for anyone who enjoys solving problems.

Contact: Sigma Technical Press, 5 Alton Road, Wilmslowm, Cheshire.

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LETTERS

Dear Sir

I have been purchasing Commodore Computing International for a number of months now and find the contents very good. Being new to the use of computers, I still rely on magazines like yours to inform me on the latest products and news.

However some of your programs seem to have a number of printer errors and the latest appeared in "Maze" from the May issue. I found that there was a bad subscript in line 510. Could you please help, these minor problems spoil for me what is otherwise a good magazine.

Mr T Fromson
Tyne and Wear

We are pleased that you enjoy our magazine, but feel that your comments on our programs are unfair. We thoroughly check all programs before they are printed and in our experience it is usually the programmer who makes the error!

It sounds as if you have missed out either the 'w' or '%' from lines 510 or 340. The printed program is correct and so we advise you to check these lines again.

Dear Sir

I am slowly going round the twist!

I have a VIC 20 with a Stack RS232C interface attached to the back. I also have a Brother CE60 Electronic daisy wheel printer which connects to the VIC 20 via a Brother cable and its interface. The printer accepts both RS232C and Centronics parallel, but the whole shooting match fails to come alive!

The Stack interface has a 25 pin male plug on the back of it and so, unfortunately does the Brother cable. However by VERY careful soldering I have paralleled off the pins so that the cable will accept a 25 pin socket. It still fails to operate, I know not why.

Can you please throw some light on the subject, I should hate to think that Commodore have led me up the garden path.

A S A Clack
Cirencester
Glos

It is very difficult to advise you on your predicament without seeing the printer manuals first. Your best course of action would be to contact the company who made the printer.

Your problem highlights the need for all Commodore computer owners to look at the printer market carefully before investing. Commodore, in their wisdom have included their own interfaces in all the computers, so not all printers will operate satisfactorily with them – as you seem to have found out.

Dear Sir

I am having trouble with the Breakout program in the April issue, No 11 Vol 2. Everytime I enter the program, I get a constant "Out of Data" error shown with respect to line 1190 (ReadA:Poke1,A:Next: Goto1280). Is this line correct?

I also noticed that in the Cursor Character Box, page 49, if I pressed the control key and key 3 I should print . However when I do press these keys, I get . Can you enlighten me?

Mr J Moore
Hartlepool
Cleveland

The Breakout program is correct. It sounds as if you need to check your data again.

The characters in the Cursor Character box are shown as they appear on our Commodore printer and on our listings. We don't print the characters as they appear on the 64's screen as we think it will be easier for programmers to type in programs from the published listings.

Dear Sir

In the May issue of Commodore Computing International, you have a software review entitled "Elementary Watson". Unfortunately my husband and I have had trouble obtaining a copy of Dr Watson's Beginners Basic Course plus Honey Aid, with book and tape for the 64.

We are both pleased with your magazine. It is very explicit and unlike others, the print is clear and understandable.

Mrs J V Claypole
Barry
S. Glamorgan

The Dr Watson series of computer language courses can be obtained from Honeyfold Software Ltd, Standfast House, Bath Place, Barnet, London. Tel: 01 441 4130.

Dear Sir

I recently saw a program featuring a development rack. Printed circuit boards with extra chips and Eproms slot into the rack and it connects them to a computer system. The rack can be used in the development stages of a program and what I would like to know is whether there is a rack available for the 64.

Antonio Windas
Hull

The simple answer is that there isn't! The 64 has a large enough memory for most programming purposes and so there isn't a market for memory expanders.

Dear Sir

Firstly, thank you for providing a publication which caters for both the novice and the proficient in Commodore computing.

Secondly, I wonder if you could furnish me with some advice.

I would like to learn more about Machine Code programming on the 64. I have dabbled with machine code on a VIC 20, laboriously POKEing the code into memory, so I am familiar with mnemonics and source code.

However when attempting to actually buy an Assembler, I become baffled by the advertising claims of the many suppliers. They all seem to assume that prospective purchasers are familiar with technical terms relating to their products. Some boast the number of "pseudo - ops" and "control commands" while others inform me I can manipulate blocks of memory, use labels or output to screen (which I thought I could do anyway!).

I assume that the only way to find out what these mysterious tributes are is to buy an Assembler and see. But, I am fearful that I may end up with something which I don't need.

Help me please! I am sure there must be other people like me who would like to venture into machine code programming, but lack sufficient knowledge to assess the merits of any product offer. What about an article on Assemblers and their relative merits?

Richard Bennett
Tarporley
Cheshire

We have had a few letters requesting information on machine code for beginners and will probably be publishing an article on assemblers and machine code in the near future.

At present we use either the Mikro, a full 6502/6510 Assembler (£57.50) from Supersoft, a resident system which doesn't require a disk drive, or the Assembler Development (£24.95) from Commodore. This is disk based and can create and call macro routines.

Commodore also do an Assembler Tutor (£29.95) which claims to be a teaching aid for would-be assembly programmers.

Contact: Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middlesex and Commodore, 675 Ajax Avenue, Slough, Berks.

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167-169 Great Portland Street, London W1.

THE TELEPHONE NUMBER TO CALL IS:

01-636 6354 (remember – Thursday afternoons, 2 pm till 5 pm)

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If you are really desperate for an answer and feel you really cannot wait for a published reply you can use our telephone enquiry service. We will have two of our staff standing-by every Thursday afternoon between 2 pm and 5 pm. That's when we want to hear from you.

Store and retrieve

This useful routine for the 64, when initialised, allows you to store and retrieve up to four screens. This is done by trapping the function keys in interrupts and storing or collecting screen data from an area behind the Basic ROM. It was written by J S Rafferty.

The screen flicking can be done in direct mode by pressing one of the function keys or in a Basic program by the use of a few simple pokes.

The program has several uses – it can be used to store four sections of a program listing so that to make an alteration to a certain line just press a function key and make the alteration, or for simple screen animation.

By pressing the function key with the shift key held down, the screen and colour memory is copied to an area behind the Basic ROM or by just pressing the function key, the screen is retrieved.

The program can be entered using the Basic loader (first listing) but the source code (MIKRO assembler) is also included.

To control the changing from a Basic program is as follows:

```
POKE653,1:POKE197,4:POKE198,1:REM STORE F1 SCREEN
POKE653,1:POKE197,5:POKE198,1:REM STORE F3 SCREEN
POKE653,1:POKE197,6:POKE198,1:REM STORE F5 SCREEN
POKE653,1:POKE197,3:POKE198,1:REM STORE F7 SCREEN
POKE197,4:POKE198,1:REM RETRIEVE F1 SCREEN
POKE197,5:POKE198,1:REM RETRIEVE F3 SCREEN
POKE197,6:POKE198,1:REM RETRIEVE F5 SCREEN
POKE197,3:POKE198,1:REM RETRIEVE F7 SCREEN
```

```
1 REM**********************
2 REM        SNAPSHOT
3 REM
4 REM  BY  J.S.RAFFERTY
5 REM
6 REM**********************
10 A=49152
20 T=0
30 READN
40 IFN=-1THENGOTO90
50 T=T+N
60 POKEA,N
70 A=A+1
80 GOTO30
90 IFT<>48956THENPRINT"]▮▮ERROR IN DATA":END
100 DATA120,169,16,141,20,3,169,192,141,21
110 DATA3,88,96,20,255,32,165,197,201,4
120 DATA208,7,173,141,2,208,44,240,110,165
130 DATA197,201,5,208,7,173,141,2,208,48
140 DATA240,114,165,197,201,6,208,7,173,141
150 DATA2,208,52,240,118,165,197,201,3,208
160 DATA7,173,141,2,208,56,240,122,76,49
170 DATA234,169,0,133,251,133,249,169,160,133
180 DATA252,169,164,133,250,76,207,192,169,0
190 DATA133,251,133,249,169,168,133,252,169,172
200 DATA133,250,76,207,192,169,0,133,251,133
210 DATA249,169,176,133,252,169,180,133,250,76
```

```
220 DATA207,192,169,0,133,251,133,249,169,184
230 DATA133,252,169,188,133,250,76,207,192,169
240 DATA0,133,251,133,249,169,160,133,252,169
250 DATA164,133,250,76,251,192,169,0,133,251
260 DATA133,249,169,168,133,252,169,172,133,250
270 DATA76,251,192,169,0,133,251,133,249,169
280 DATA176,133,252,169,180,133,250,76,251,192
290 DATA169,0,133,251,133,249,169,184,133,252
300 DATA169,188,133,250,76,251,192,169,0,133
310 DATA253,133,247,169,4,133,254,169,216,133
320 DATA248,162,4,160,0,177,253,145,251,177
330 DATA247,145,249,200,208,245,202,240,68,230
340 DATA254,230,252,230,248,230,250,24,76,225
350 DATA192,165,1,41,254,133,1,169,0,133
360 DATA253,133,247,169,4,133,254,169,216,133
370 DATA248,162,4,160,0,177,251,145,253,177
380 DATA249,145,247,200,208,245,202,240,12,230
390 DATA254,230,252,230,250,230,248,24,76,19
400 DATA193,165,1,9,1,133,1,169,0,133
410 DATA198,76,49,234,-1
420 SYS49152
430 PRINT"▓▓HAVE YOU SAVED PROGRAM (Y/N) ?"
440 POKE198,0:WAIT198,1
450 IFA$="Y"THEN NEW
460 PRINT"▓▓PLEASE SAVE PROGRAM":END
READY.
```

```
1000 C000          *=$C000
1010 C000          VMAT          =  $FD
1020 C000          BASE          =  $FB
1030 C000          CMOV          =  $F9
1040 C000          COLR          =  $F7
1050 C000          SHIFT         =  $028D
1060 C000 78                     SEI
1070 C001 A910                   LDA #$10
1080 C003 8D1403                 STA $0314
1090 C006 A9C0                   LDA #$C0
1100 C008 8D1503                 STA $0315
1110 C00B 58                     CLI
1120 C00C 60                     RTS
1130 C010          *=$C010
1140 C010 A5C5                   LDA $C5
1150 C012 C904                   CMP #4
1160 C014 D007                   BNE TRYB
1170 C016 AD8D02                 LDA SHIFT
1180 C019 D02C                   BNE SCRA
1190 C01B F06E                   BEQ AMAT
1200 C01D A5C5     TRYB          LDA $C5
```

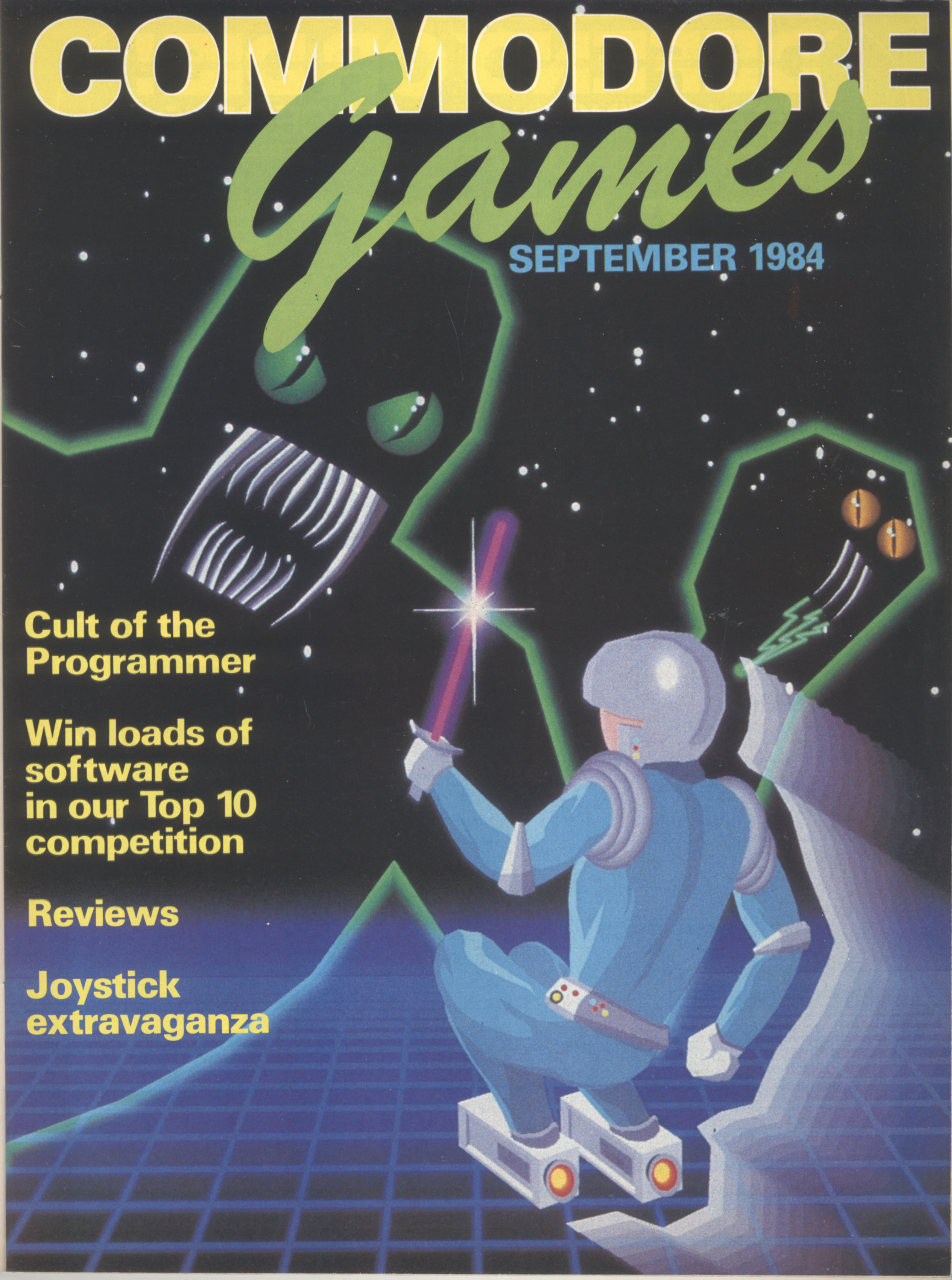
```
1210  C01F  C905                  CMP #5
1220  C021  D007                  BNE TRYC
1230  C023  AD8D02                LDA SHIFT
1240  C026  D030                  BNE SCRB
1250  C028  F072                  BEQ BMAT
1260  C02A  A5C5     TRYC         LDA $C5
1270  C02C  C906                  CMP #6
1280  C02E  D007                  BNE TRYD
1290  C030  AD8D02                LDA SHIFT
1300  C033  D034                  BNE SCRC
1310  C035  F076                  BEQ CMAT
1320  C037  A5C5     TRYD         LDA $C5
1330  C039  C903                  CMP #3
1340  C03B  D007                  BNE NOFUN
1350  C03D  AD8D02                LDA SHIFT
1360  C040  D038                  BNE SCRD
1370  C042  F07A                  BEQ DMAT
1380  C044  4C31EA   NOFUN        JMP $EA31
1390  C047  A900     SCRA         LDA #0
1400  C049  85FB                  STA BASE
1410  C04B  85F9                  STA CMOV
1420  C04D  A9A0                  LDA #$A0
1430  C04F  85FC                  STA BASE+1
1440  C051  A9A4                  LDA #$A4
1450  C053  85FA                  STA CMOV+1
1460  C055  4CCFC0                JMP VOUT
1470  C058  A900     SCRB         LDA #0
1480  C05A  85FB                  STA BASE
1490  C05C  85F9                  STA CMOV
1500  C05E  A9A8                  LDA #$A8
1510  C060  85FC                  STA BASE+1
1520  C062  A9AC                  LDA #$AC
1530  C064  85FA                  STA CMOV+1
1540  C066  4CCFC0                JMP VOUT
1550  C069  A900     SCRC         LDA #0
1560  C06B  85FB                  STA BASE
1570  C06D  85F9                  STA CMOV
1580  C06F  A9B0                  LDA #$B0
1590  C071  85FC                  STA BASE+1
1600  C073  A9B4                  LDA #$B4
1610  C075  85FA                  STA CMOV+1
1620  C077  4CCFC0                JMP VOUT
1630  C07A  A900     SCRD         LDA #0
1640  C07C  85FB                  STA BASE
1650  C07E  85F9                  STA CMOV
1660  C080  A9B8                  LDA #$B8
1670  C082  85FC                  STA BASE+1
1680  C084  A9BC                  LDA #$BC
1690  C086  85FA                  STA CMOV+1
```

```
1700 C088 4CCFC0                 JMP VOUT
1710 C08B A900    AMAT           LDA #0
1720 C08D 85FB                   STA BASE
1730 C08F 85F9                   STA CMOV
1740 C091 A9A0                   LDA #$A0
1750 C093 85FC                   STA BASE+1
1760 C095 A9A4                   LDA #$A4
1770 C097 85FA                   STA CMOV+1
1780 C099 4CFBC0                 JMP VIN
1790 C09C A900    BMAT           LDA #0
1800 C09E 85FB                   STA BASE
1810 C0A0 85F9                   STA CMOV
1820 C0A2 A9A8                   LDA #$A8
1830 C0A4 85FC                   STA BASE+1
1840 C0A6 A9AC                   LDA #$AC
1850 C0A8 85FA                   STA CMOV+1
1860 C0AA 4CFBC0                 JMP VIN
1870 C0AD A900    CMAT           LDA #0
1880 C0AF 85FB                   STA BASE
1890 C0B1 85F9                   STA CMOV
1900 C0B3 A9B0                   LDA #$B0
1910 C0B5 85FC                   STA BASE+1
1920 C0B7 A9B4                   LDA #$B4
1930 C0B9 85FA                   STA CMOV+1
1940 C0BB 4CFBC0                 JMP VIN
1950 C0BE A900    DMAT           LDA #0
1960 C0C0 85FB                   STA BASE
1970 C0C2 85F9                   STA CMOV
1980 C0C4 A9B8                   LDA #$B8
1990 C0C6 85FC                   STA BASE+1
2000 C0C8 A9BC                   LDA #$BC
2010 C0CA 85FA                   STA CMOV+1
2020 C0CC 4CFBC0                 JMP VIN
2030 C0CF A900    VOUT           LDA #0
2040 C0D1 85FD                   STA VMAT
2050 C0D3 85F7                   STA COLR
2060 C0D5 A904                   LDA #4
2070 C0D7 85FE                   STA VMAT+1
2080 C0D9 A9D8                   LDA #$D8
2090 C0DB 85F8                   STA COLR+1
2100 C0DD A204                   LDX #4
2110 C0DF A000                   LDY #0
2120 C0E1 B1FD    LOOP           LDA (VMAT),Y
2130 C0E3 91FB                   STA (BASE),Y
2140 C0E5 B1F7                   LDA (COLR),Y
2150 C0E7 91F9                   STA (CMOV),Y
2160 C0E9 C8                     INY
2170 C0EA D0F5                   BNE LOOP
2180 C0EC CA                     DEX
```

```
2190 C0ED F044             BEQ EXIT
2200 C0EF E6FE             INC VMAT+1
2210 C0F1 E6FC             INC BASE+1
2220 C0F3 E6F8             INC COLR+1
2230 C0F5 E6FA             INC CMOV+1
2240 C0F7 18               CLC
2250 C0F8 4CE1C0           JMP LOOP
2260 C0FB A501    VIN      LDA $01
2270 C0FD 29FE             AND #$FE
2280 C0FF 8501             STA $01
2290 C101 A900             LDA #0
2300 C103 85FD             STA VMAT
2310 C105 85F7             STA COLR
2320 C107 A904             LDA #4
2330 C109 85FE             STA VMAT+1
2340 C10B A9D8             LDA #$D8
2350 C10D 85F8             STA COLR+1
2360 C10F A204             LDX #4
2370 C111 A000             LDY #0
2380 C113 B1FB    POOL     LDA (BASE),Y
2390 C115 91FD             STA (VMAT),Y
2400 C117 B1F9             LDA (CMOV),Y
2410 C119 91F7             STA (COLR),Y
2420 C11B C8               INY
2430 C11C D0F5             BNE POOL
2440 C11E CA               DEX
2450 C11F F00C             BEQ PREX
2460 C121 E6FE             INC VMAT+1
2470 C123 E6FC             INC BASE+1
2480 C125 E6FA             INC CMOV+1
2490 C127 E6F8             INC COLR+1
2500 C129 18               CLC
2510 C12A 4C13C1           JMP POOL
2520 C12D A501    PREX     LDA $01
2530 C12F 0901             ORA #1
2540 C131 8501             STA $01
2550 C133 A900    EXIT     LDA #0
2560 C135 85C6             STA 198
2570 C137 4C31EA           JMP $EA31
```

COMMODORE games

SEPTEMBER 1984



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Reviews

Joystick extravaganza

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IN ALLIGATA'S AMAZING OUTER SPACE SPECTACULAR...

COMMODORE 64

ELECTRON

STAR REVIEW
"The BEST version of the arcade hit. Far far superior to anything currently available including the official Atari—soft version."
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Once again Alligata's reputation for fast machine code action and high resolution graphics has combined to create a classic battle spectacular.

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Loco. Skilfully manoeuvre the six track railway dodging aerial bombardment from planes and airships, avoiding fatal collision with oncoming handcarts aided only by your lethal smoke and steam and a unique split screen feature giving immediate action viewing with a master plan image of impending danger. **Son of Blagger.** Not many sequels live up to reputation, but in this drama of one, long continuous screen action the antics of Slippery Sid will keep you enthralled for days on end. **Contract Bridge.** Improve your technique with this sophisticated program where the computer bids and plays the other three hands in a full rubber plus scoring. **Aztec Tomb Part II.** If you solved the mystery of the South American jungle in part one, the sequel might be just within your grasp. **Blagger.** Platform programming at its best, 30 nerve racking screens featuring Roger the Dodger and his cat burglaring exploits. **Rocket Roger.** Walk, run, jump and even jet thrust your way round this single, continuously scrolling screen drama as rocket propelled Roger mines crystal fuel for his stranded mother ship, fighting off hordes of marauding nasties on the way.

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Evil Dead hit by gremlins

There were red faces all round at a lavish press reception held at the London Dungeons to mark the launch of Palace Software's much publicised 64-game, The Evil Dead. The game wasn't ready.

As programmer Richard Leinfellner was putting the finishing touches to the game, he was unaware of the fact that his disk drive had crashed, destroying many hours of hard work. Could it be that the ancient spirits of the undead were unwilling to be raised again?

Curiouser still, when we eventually laid our hands on a copy of the game we encountered problems with our 64's power supply which prevented us from playing it!

For those of you still willing to tackle the Evil Dead, the 64 version costs £6.99.

Contact: Palace Software, 275 Pentonville Road, London N1. Tel: 01-278 0751.

Olympic mania

The Olympics have finished, but the race is on for the best Olympic-based game and as they flood into the office the competition for the golden game will be fierce.

Daley Thompson's Decathlon at £7.90, by Ocean Software, features the ten Decathlon events and Daley himself pronounced the game "fit".

Activision's version of the Decathlon costs £9.99 and includes helpful tips by David Crane, the famous athlete.

Micro Olympics from Database costs £5.95 and involves the player in the main eleven field and track events.

Besides these sporty programs Storm Software have brought out two programs filled with facts and figures on the Olympics. The first one details all the medal winners since the Athens Olympics in 1896 and the second enables you to record all the details of the medallists in the Los Angeles Olympics and match them against winners in the previous two Olympic games.

Finally, Olympic Skier from Mr Chip, at £5.99, provides the thrills and spills of the Slalom, Ski-Jump and Downhill events.

Contacts: Ocean Software. Tel: 061 832 6633. Activision. Tel: 01 486 7588. Database Publications. Tel: 061 456 8383. Storm Software. Tel: 0935 813528. Mr Chip. Tel: 0492 79026.

Space race

Legend have finally announced the follow-up to Valhalla — The Great Space Race, described by Legend as "a spectacular futuristic romp".

There are numerous space games on sale, but this one incorporates a number of special features — technical effects created by Movisoft 2, 3D graphics and facial animation on characters.

There are two phases in the game. The pre-race section sees the player attempting to amass the best space equipment and then participating in the "anything goes" race against time, natural obstacles and competitors.

By early October, when the game is due for release, Legend will have spent £¼ million on its development. This is believed to be the largest amount ever spent on a single game. The price of the game has yet to be announced.

Contact: Legend, PO Box 435, London E4. Tel: 01 524 8324.

Oh Borzak!!!

Borzak . . . . The Amazing Bug-Eyed Beastie from Betelgeuse and Time Zone, recently launched by Channel 8 Software, are available on cassette at £6.95 each. Both deal with alien life forms — mutated, inebriated and otherwise.

Channel 8 are also marketing American educational Software following a reciprocal agreement with Comm* Data, based in the USA. Toddler Tutor, Primary Maths, Maths Tutor and Gotcha Maths are aimed at varying age ranges and utilise colourful graphics, sound and amusing game ideas.

Contact: Channel 8 Software Ltd, 51 Fishergate, Preston, Lancashire. Tel: 0772 53057.

Joined forces

AI Products is a joint company formed by Mastertronic and Galactic Software with two objectives: to ensure a continuing source of software and to add a range of competitively priced educational and business software to the existing games. Both companies are still functioning as separate organisations.

Games Creator, a program design system for the 64, devised by Galactic was used to develop most of their software. It removes much of the time consuming repetition involved in programming and graphics can be designed using a joystick.

Mirrorsoft are selling this program for £12.95 on cassette in the UK and the rest of Europe, while Galactic and AI Products have the right to market it in Japan and the USA. Mastertronic will be selling a VIC 20 version.

Contacts: Galactic Software. Tel 04605 5161. Mastertronic. Tel: 01 935 4944. Mirrorsoft. Tel: 01 822 3082.

Ad Infinitum

Mr Chip have set a mid-September launch date for their latest title, Ad Infinitum. Available on cassette, it will cost about £7 and includes Turbo loader.

The same resembles Space Invaders, but incorporates additional features — 256 alien waves assault the player and it is possible to progress through all these levels recording the number of lives lost rather than actually losing them.

Contact: Mr Chip, Dept CC, 9 Caroline Road, Llandudno, Gwynedd. Tel: 0492 79026.

Down in price

Price cuts on many of Audiogenic's older games have been announced. Motor Mania and Renaissance for the 64 and Bonzo for the VIC 20. have been reduced from £8.95 to £5.95 while Grandmaster's price has been halved from £17.95 to £8.95 on cassette and £12.95 on disk.

Audiogenic also plan to release two new graphic adventure games for the 64 at the end of the month. In Magic Stone, the action takes place in a haunted mansion and the idea is to transform a lump of lead into gold with the help of the magic stone, a magic word and a book.

Time Traveller occupies three time dimensions — the past, present and future. The player has to pass into the past and future via a spaceship, collect vital information and finally assemble a magic hourglass in the present.

Contact: Audiogenic, PO Box 88, Reading, Berks. Tel: 0734 586334.

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A female touch

Continuing our look at programmers, Sue Pearce discovers (shock, horror!) that female programmers do actually exist!

Darran Eter — Artic Games

"Programming is something which I have just picked up over the years," says Darran Eter, who recently joined Artic Games' in-house team of programmers.

An interest in electronics led quite naturally to Darran becoming a computer hobbyist. From his original ZX81 computer, he moved on to the Dragon 32, then a Spectrum and Darran is now working on the 64. "It's a great machine," comments Darran. "The graphics are good, but I must admit that the 6502 leaves something to be desired."

Darran has been working on 64 games for Artic for a few months now, but is keeping any information about them firmly under wraps for the time being. All he would reveal was that they are new arcade games.

Never one to be stuck for new ideas, Darran is fortunate in that ideas just spring to mind in his everyday activities. "I could be doing something such as watching the television when I come up with a new idea," he says.

A self-confessed addict of arcade games, Darran enjoys playing other peoples games as long as they are good. And Darran's definition of a good game: "It has to be original and exciting to play. Normally I prefer arcade games, but occasionally I find an adventure that I enjoy playing."

Working methodically, Darran tends to write everything down, working through the sections of a game. "I never go straight to the keyboard," he says.

In the course of talking to various programmers, one fact which is emerging is that many programmers are gradually settling down to a relatively normal working hours in comparison to the early days when the majority remained glued to their keyboards for up to 20 hours a day!

Darran usually finds himself working a 9-5pm day, although there are occasions when it is essential to work longer hours to complete a project. "I've got a computer at home as well," says Darran. "But if I do use the computer at home, I always stop at about midnight — by that time I'm fed up."

Commercial programming is Darran's next ambition. He comments: "I would imagine that it is a lot harder to write a commercial program than a game. It's far more mathematical, but I've got that sort of brain."

Jean Frost — Addictive Games

Being a woman programmer in what is still considered to be a male-dominated market can have its drawbacks as Jean Frost has discovered. One of the few female programmers employed by a software house, Jean explains: "It's certainly a conversation stopper. People think it's strange and assume that I must be really clever and therefore not worth talking to."

Jean also finds it hard to live down the 'super-being' image she has encountered. It is not uncommon for her to receive phone calls from people asking if she is really a woman. "Once somebody rang up and asked for Jean pronounced as the Frenchman's name," recalls Jean.

Apart from those who seem unable to conceive that women are every bit as capable of programming, Jean finds that it's an enjoyable way to make a living.

It all started when Jean became disabled through arthritis five years ago and was forced to give up her job as an accounts clerk. A Government Rehabilitation Centre suggested computer programming and arranged a course for Jean.

Following her first computing job writing commercial software for Kalamazoo, Jean became self-employed writing computer books such as her Instant Arcade Games book published by Pan Books.

"I decided that I didn't like being self-employed," says Jean. "I saw an advert for a programmer with Addictive Games and got the job six months ago."

Jean wrote the 64 conversion for Addictive Games' Football Manager. "The graphic capabilities of the 64 enabled me to redesign all the graphics from scratch," comments Jean. "It took me five months to write and I'm now sick of playing it."

Watching other people playing her games is another matter. "It's marvellous to watch other people enjoying a game that I have written," says Jean. "I get quite big-headed!"

Most of Jean's ideas for games come when she is ill, but fortunately she doesn't have to be bedridden to come up with them. Jean explains: "When I get stuck in bed my mind begins to turn in on itself. I have the time to think through new ideas.

"I never go straight onto the keyboard with a new game," continues Jean. "I tried it but found you make a lot of mistakes. It's much better to put it down on paper and think it all through properly." Jean is currently working on another book, Artificial Intelligence, which looks at how to give your computer a personality.

Let's hope we see more women like Jean making a name for themselves in the computer world.

Bill Barna — Ocean Software

ocean
DECATHLON

When Bill Barna decided to learn about micro processors it was a choice between a ZX80 or a bread board and bits of wire! Bill explains: "My background is in electronics, and when I wanted to learn about processors the ZX80 was the cheapest way to find out how it worked rather than making something myself. The other advantage being that it showed what was happening on the screen."

What he learnt fascinated him and Bill soon moved over from electronics, teaching himself how to program. An advertisement led to Bill joining the Ocean team of programmers.

Originally employed to program on the Dragon, Bill moved on to program on the 64 when a vacancy arose. "The 64 is a superb machine," he says. "It's got a lot of nice features which make it a programmers machine."

Arcade games stimulate ideas for new games. Bill says: "We tend to develop ideas. If we like the story line or particular effects of a game, we will put that idea to use."

Bill was part of the team of three who put together new Ocean release, Daley Thompson's Decathalon. This game features no less than 10 events. Bill programmed the running events and hurdles. "Some events involved similar techniques so it was logical that one person worked on those events," says Bill. "For example, javelin and discus require the same angles."

Each event is really a game in itself, so a great deal of planning was essential before the game took shape. "We started with a basic working model illustrating the structure of the game which we built up until the final model," comments Bill. "We had to use a lot of flow charts because the programs got pretty involved. A lot was done on paper but you always have to go back to the computer to see if an idea works."

"Decathalon was hard," he continues. "There isn't enough room in the computer to feature all the sprite data. To get over this problem the program is constantly flipping data in and out, moving 4K chunks about to where it can be read by the VIC chip."

Richard Leinfellner — Palace Software

Palace has recently entered the computer software market with the launch of the game version of its successful film, Evil Dead. Richard Leinfellner is the man who programmed the 64-version of Evil Dead.

"When we watched the film we saw immediate potential in the characters and events for a computer game," says Richard. "We are keeping to the same storyline, but obviously not to every scene in the film."

Richard's connection with Palace began when he started working at the Video Palace on Saturdays while studying for a degree in Physics and Electronics. He then worked there full-time as a sales assistant before the formation of Palace Software which he joined as a programmer.

Professionally, Richard has been involved in computers for a year, but it all began as a hobby when he was 14. "I built a kit computer — the Microtown 65, which I learnt 6502 code on," he says.

The next step was a BBC model which, Richard says, he never liked. He was then introduced to the 64 'by force'! Richard recalls: "It was becoming the best-selling machine, but I hated it at first. However once I started getting into Hex and the structure I started liking it. Now I think it's the best around."

Evil Dead is the first commercial game Richard has written, although he used to program for his own pleasure.

"I'm one of the messiest people I know," confides Richard. "I have bits of paper scattered all over the office with Sprite routines and things on. At certain points of a game I will scribble things down on flow charts. For example, with Evil Dead there are a lot of intelligent routines which I put down on flow charts — characters in the game that try to find you."

Richard has his days mapped out. Mornings are set aside for covering new grounds and afternoons for sorting out any bugs or problems. "By about 5pm my brain switches off," says Richard, who usually sticks to a 9-5pm working day apart from when the pressure is on to get a project finished.

He continues: "I find that when I go home it's better to switch off completely. I might play a flight simulator game or watch video. By the time I get back to work the next day I can start with a completely fresh mind."

Win the Top 10 games

What game will be at the top of the Commodore charts next month? That's what we want you to tell us.

We are giving away the 10 most popular Commodore games to the winner of this month's competition.

Your task is to predict the top 10 games in the order they will appear in next month's Top 20 chart. The sender of the first correct entry to reach us will win the top ten best-selling games. Ten runners-up will also receive a copy of the number one game.

So get your crystal ball out now and start predicting. We'll be publishing the competition results in next month's issue, so put pen to paper now.

The closing date for entries is 20 September 1984. The Editor's decision is final.

I predict the Top 10 will be:

1. ....
2. ....
3. ....
4. ....
5. ....
6. ....
7. ....
8. ....
9. ....
10. ....

Name: ______________________________

Address: ______________________________

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Fifty Hobbit winners

Entries arrived by the sackload following our Hobbit competition in the May issue of Commodore Games. (In fact they are still trickling in, so please – no more!)

The aim of the competition was to find the 10 words relating to The Hobbit in our wordsquare. It was a simple competition, but we had some amazing answers such as evade, art and load!

The correct answers were: Bilbo, Dwarves, Elvenking, Elves, Hobbit, Lord, Middle-Earth, Rings, Tolkien and Wilderland.

Fifty free copies of The Hobbit are winging their way to the lucky winners of our recent wordsquare competition. Read on to see if you are among our winners

Fifty copies of The Hobbit from Melbourne House are on their way to our winners. The first 50 correct entires to arrive at CCI were from: Mrs M Ives of Hepworth, Norfolk; Mr Mascal of Thornbury, Bristol; J Sladen of Spondon, Derby; E Shaw of Ripley, Derby; Mr I C Carr of Aston, Birmingham; Mr T Benjamin of Hainault, Ilford; D Mealing of Witham, Essex; Mr R Morris of Harcourt, Leicester; Mr S Quance of Hull, N Humbershire; Mr T Bright of Newmarket, Suffolk; Mr R Whipp of Burnley, Lancs; Mr J Moore of Brentwood, Essex; Mr A Smith of Redcar, Cleveland; Mr A Worth of Coven, Newton; Mr S Willett of Bulkington, Warwickshire; P Richmond-Swift of Portsmouth, Hants; Mr N Jones of Barnsley, S Yorkshire; Mr S Archer of Huntingdon, Cambs; S M Green of Tyldesley, Manchester; Mr D Venton of Wimborne, Dorset; C Patel of London; Mr P Steele-Seed of Warrington, Cheshire; Mr D Green of Doncaster, S Yorkshire; Mr A Hodgson of Bingley, W Yorkshire; Miss L Gibson of Withern, Lincs; Mr T Hunter of Whitby, N Yorkshire; Ms S Pizzie of Brentwood, Essex; S Walton of Beckenham, Kent; B Hobbs of Warminster, Wilts; M Harrison of Haxby, York; Mr M Taylor of Ilford, Essex; H Sabharwal of Onchan, Isle of Man; Mr I Ingram of Newark, Notts; Miss D Light of Chelmsley Wood, Birmingham; Mr J Simons of Fleckney, Leicester; P Littlewood of Retford, Notts; Mr W Bolt of St Judes, Plymouth; R Palmer of Stafford; J Rosalki of London; Mrs F Hales of Godalming, Surrey; Mr I Prout of Oldham, Lancs; Mr G Owen of Wimborne, Dorset; Mr J E Cross of Shrewsbury, Shropshire; Mr P Serbert of Pannal, N Yorkshire; P Middleton of Co. Durham; R Back of Poole, Dorset; Mr R Mason of Bury St Edmonds, Suffolk; Mr D Dodge of Atherston; A Goillau of Camborne, Cornwall; Mr M Younger of Stockport, Cheshire.

Congratulations to all our winners. If you weren't lucky this time, have a go at this month's Top 10 competition.

Don't get scrambled

Catching eggs is just one of your tasks in this month's selection of action packed games for the 64 and VIC 20

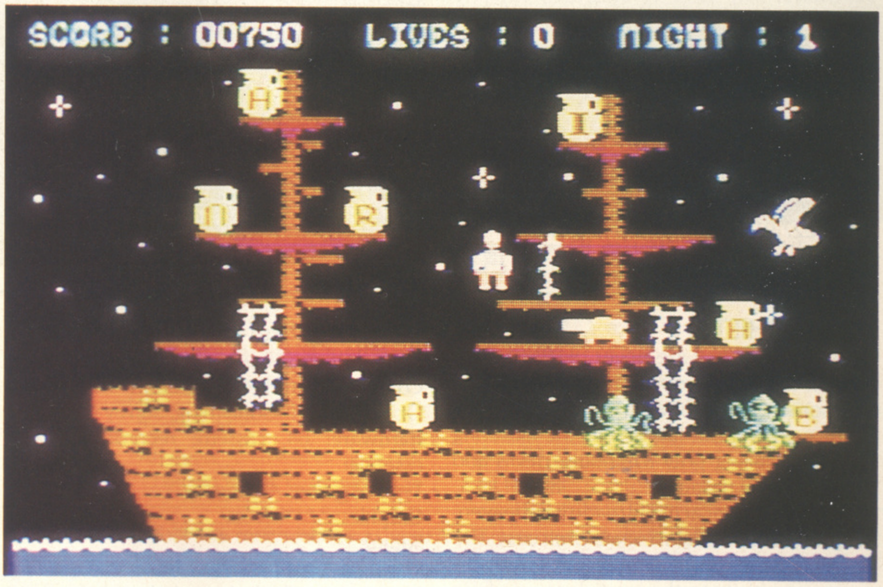
TALES OF THE ARABIAN NIGHTS

Sultan Saladin believed all women to be faithless and after he'd spent one night with a wife he had her put to death (charming)!

The beautiful Princess Anitra is next on the list and Prince Imrahil sets out to save her.

His quest begins on board a ship where he has to collect all the jugs spelling ARABIAN whilst avoiding octopi, cannon balls and Rocs. Next he negotiates a crocodile infested river and has to duck the rocks thrown by hostile nomads. Once in the underground cavern, mad genies make life very difficult, but with your brilliant arcade skills, Imrahil will have no trouble. His final act must be to grab Anitra and sail away on a magic carpet.

Tales of the Arabian Nights is challenging entertainment and uses the 64's graphics and sound capabilities well. The program also includes a voice synthesiser which introduces you to the game!



Title: Tales of the Arabian Nights
Programmer: Ian Gray
Company: Interceptor Software, Lindon House, The Green, Tadley, Hants. Tel: 07356 71145
Hardware: 64, cassette recorder, joystick essential
Type of game: Arcade
Graphics: ****
Sound: *****
Playability: ****
Description: Rescue princess Anitra in this Arabian adventure
Price; £7 (cassette) and £9 (disk)
CCI Rating: ****

BURNIN' RUBBER

Fast, exciting and marvellous fun. Burnin' Rubber is compulsive playing and was popular in the games competition we held at the Commodore Show.

You are in control of a jumping pink racing car and command a bird's-eye view of the 'Four Seasons Death race'. The idea is to score lots of points by knocking fellow competitors into the side, landing on them and of course completing each of the 32 rounds in seasonal order – Spring, Summer, Autumn and Winter.

Fellow demon drivers are also out to win, so the indestructible pink tanks, maniac pirates and other colourful cars are dangerous opposition. As the game progresses, the obstacles gain in frequency and difficulty. First it's just nasty oil patches and water jumps, but in later rounds the track starts to resemble the grand national with hurdles and tricky dead ends.

Jolly musical tunes, sensitive car control and its theme give Burnin' Rubber irresistable appeal and provides more than its money's worth in entertainment value.

It's worth noting that Bumping Buggies from Bubble Bus has exactly the same theme – both companies got hold of the program and altered it to suit themselves!

Title: Burnin' Rubber
Programmer: Belgian author (Tequila Sunrise Ltd)
Company: Audiogenic Ltd, PO Box 88, Reading, Berks. Tel: 0734 586334
Hardware: 64, cassette recorder and joystick optional
Type of game: Arcade
Graphics: ****
Sound: ***
Playability: *****
Description: Employ aggressive tactics and win the race
Price: £6.95
CCI Rating: ****

THE PIT

Your spacecraft has landed on an alien planet which has an interior filled with rare jewels and gems.

Luckily you are equipped with a powerful drill and a laser gun and with these you have to drill down to the depths of the cavern and return to the spaceship carrying at least one of the larger gems. To make your task even more exciting, you have to return to your ship before a surface tank destroys the mountain.

Some passages running through the rocks already exist, but unfortunately they contain patrolling robots which kill you on contact. Otherwise you have to drill your own passage through the rock, reach the jewels and take care that boulders embedded in the rock don't fall on you.

Once in the large Gem cavern, lethal missiles drop from the roof and you have to grab a stone and get out otherwise it's curtains. Once all the loot has been collected your final obstacle is to negotiate a force field and a nasty monster swimming in slime.

The Pit is based on the popular American arcade game, Centuri and is a good adaptation for the 64 with colourful bright graphics and interesting sound effects. It is an appealing exciting game.

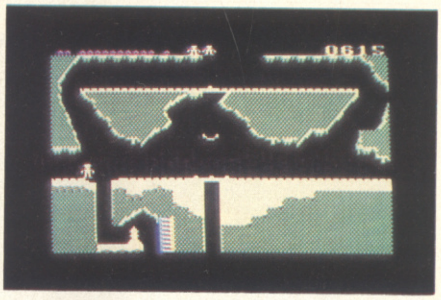
Title: The Pit
Programmer: Bill Huberich
Company: Hesware, Thorn EMI Computer software, Thomson House, 296 Farnborough Road, Farnborough, Hants. Tel: 0252 543333
Hardware: 64, cassette recorder, joystick essential
Type of game: Arcade
Graphics: ****
Sound: ****
Playability: ****
Fast Loader: Turbo
Description: Drill down into the pit and grab all the jewels
Price: £27.95 (cartridge) £9.95 (cassette)
CCI rating: ****

PHAROAHS CURSE

Beneath the Sahara desert 43 centuries ago, a wicked Pharoah constructed a death tomb and cunningly hid 16 of his treasures within it.

Gold, art pieces, jewel encrusted scarabs – everything was placed inside the various passages and chambers and to guard them he placed curses, traps, winged avengers, an indestructible Pharoah and the dreaded Mummie wanderers, inside.

You, the intrepid explorer have discovered the entrance and now have the ominous task of collecting all items of treasure. It's not easy, the traps set in the chamber floors are unpredictable and everything that moves is dangerous and needs to be shot.



As you travel through the chambers, finding a treasure will give you an extra life and the keys strewn around are needed to open the cavern doors. Ropes can be used to pull yourself out of sticky situations and every so often a crown and arrow will appear. The former grants an extra life and the arrow takes one away.

There are four levels altogether, but each level has to be completed before moving up because completing a level is the only way to discover the password.

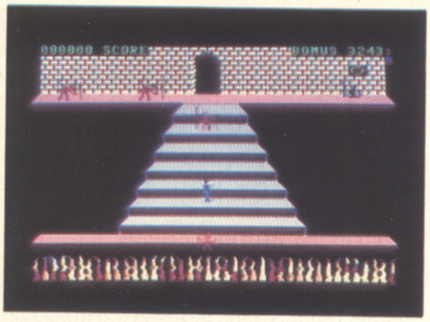
Pharoahs Curse makes excellent use of the VIC 20's capabilities and both the graphics and sound contribute to the game. It is compulsive playing and all VIC 20 owners will be thrilled to discover what their machine can really do.

Title: Pharoahs Curse
Programmer: Alick Dziabczenko
Company: Hesware, Thorn EMI Computer Software, Thomson House, 296 Farnborough Road, Farnborough, Hants. Tel: 0252 543333
Hardware: VIC 20 with 16K, cassette recorder and joystick essential
Type of game: Arcade/Adventure
Graphics: ****
Sound: ****
Playability: *****
Fast Loader: Turbo
Description: Travel through the chambers and collect 16 treasures
Price: £19.95 (cartridge), £9.95 (cassette)
CCI Rating: ****

MR MEPHISTO

The depths of hell are never pleasant a the best of times, but you're at the very bottom and somehow you have to climb the stairway to heaven without falling into the flickering flames or falling prey to ghouls, devils and other unusual nasties.

Typically I never actually made it to heaven, but the first few stair levels were not easy. The man you are controlling responds with extreme sensitivity to the joystick so one false move and he falls off the narrow walkways into the flames. An epic poem, the Lament of Hugo Twol (!) provides vital clues to the game, so read it carefully. The basic aim is to climb the stairs, open doors and avoid trouble.



The graphics in the game are excellent – red, yellow and black devils creep around or emerge from the floor very realistically. The main nasty demon is a red cloaked figure emitting jets of flame! The sounds are good and skill and speed levels can be changed to suit all abilities. It is fitted with Overdrive, a fast loading mechanism.

Mr Mephisto is original, works very well and is worth adding to your arcade collection.

Title: Mr Mephisto
Programmer: Dave Lucas
Company: Euro-Byte Ltd, Churchmill House, Ockford Road, Godalming, Surrey GU7 1QY
Hardware: 64, cassette recorder, joystick essential
Type of game: Arcade
Graphics: ****
Sound: ****
Playability: ****
Description: Climb the stairway to Heaven
Price: £
CCI Rating: ****

SHEEP IN SPACE

Another game from Minter starring the ungulate's. This time it's a metagalactic sheep which flies around zapping Bonics (yes, white dog biscuits) at everything in sight.

The planets are under attack by the energy-draining hostiles which, if you're not quick enough eventually build up an amazing charge of energy on Planet Buster. As you flit through the planet various aliens whizz by and every so often you find yourself in mid space between planets with even more aggressive space persons.

Occasionally all the aliens disappear, but don't despair, pressing the space bar activates the time warp and you find some.

The sheep also has a stomach which starts off bloated and gradually goes through various stages of hunger – repleted, adequate and peckish. Replenishing it is a feat in itself as you try to land on the planet avoiding the trees.

Yellow Llamas are introduced at every opportunity although they don't do much and the sheep actually resemble white woodlice while flying through the air, only looking like proper sheep when they uncurl their legs to land. 'Got you Sheepoid' appears when all your lives are lost.

It's a good game – original ideas, excellent graphics, fast action and sensitive control of the sheep. Should suit most people.

Title: Sheep in Space
Programmer: Jeff Minter
Company: Llama Software, 49 Mount Pleasant, Tadley. Tel: 07356 4478
Hardware; 64 cassette recorder, joystick essential
Type of game: Arcade
Graphics: ****
Sound: ***
Playability: ****
Fast Loader: Turbo
Description: Zap bonics and stop destruction of your Power stations
Price: £7.50
CCI Rating: ****

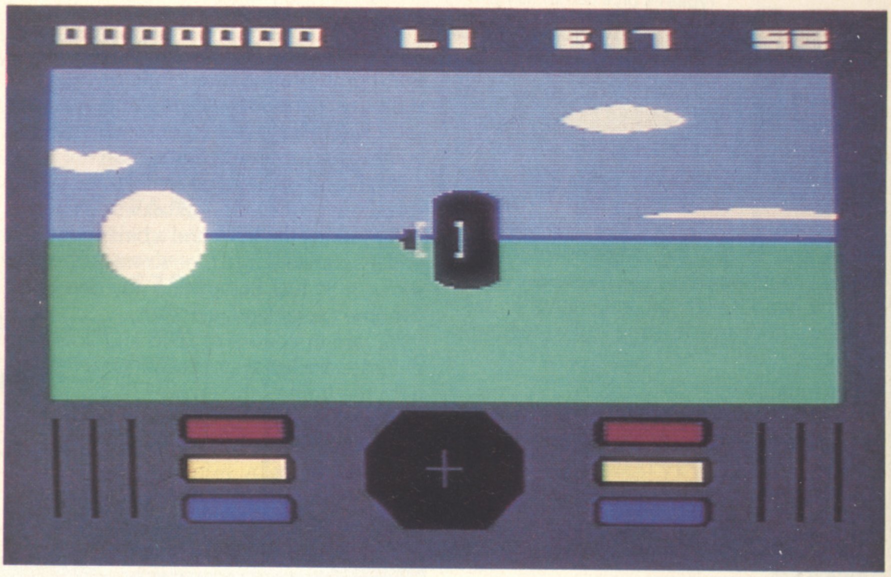
ENCOUNTER

Mysterious obelisks cover an alien planet's surface and you, the commander of a probe ship, swoop down to get a closer look. But you find yourself locked in deadly combat with cunning flying saucers and missiles.

The graphics create a superbly realistic colourful 3D effect and the accompanying sounds are excellent. You are looking out of the front window of the ship and an instrument panel combining a scanner screen and three indicator warning lights warn you when adverseries are approaching and if a shot has been fired.

Both the missiles and saucers (recognised by the sounds they make) are intelligent and their pattern of movement gets more complicated as the game progresses. The graphics are so good that any shots fired by either you or the enemies grow in size as they approach you or recede into the distance and in fact these obelisks can be used for protection as any shots hitting them will rebound.

There are eight levels altogether and some very clever tactics will be needed to complete them all. Each level has a certain number of enemies that have to be destroyed and if you manage to hit them all, a door appears and your ship enters a corridor full of objects which if not avoided will destroy you. Different landscapes and two new enemy saucer attack strategies characterise the other levels. In total there are seventeen different enemy styles.



Believe me this game will take up hours of your time and will be a smash hit for the 64.

Title: Encounter
Programmer: Paul Woakes
Company: Novagen Software, Hi-Tech Distribution, 212 Broad Street, Birmingham 15
Hardware: 64, cassette recorder or disk drive, joystick essential
Graphics: *****
Sound: *****
Playability: *****
Fast Loader: Novaload
Description: Destroy the enemies on a superb 3D battle field
Price: £9.95 (cassette) $12.95 (disk)
CCI Rating: *****

BIZY BEEZZZZ

Teddy gets lost on the way to the Bears Picnic and is getting very hungry. Luckily there are honey pots lying around on platforms (pretend they are the woods!) and he has to eat the contents of every single one.

The bees buzzing round these honey jars are particularly possessive and any contact with Teddy proves to be lethal, so make sure you have a strategy before you start guiding Teddy round the woods. The platforms are connected by lifts and ladders and there are a lot of gaps which need to be negotiated. When making a jump, time it carefully because the slightest miscalculation results in instant death.

The control of Teddy is fairly sensitive and the game is quite fun to play, but its best feature is the excellent rendition of Teddy Bears picnic.

Title: Bizy Beezzzz
Programmer: J. Baugley
Company: Solar Software, 51 Meadowcroft, Radcliffe, Manchester. Tel: 061 724 8622
Hardware: 64, cassette recorder, joystick optional
Type of game: Arcade
Graphics: ***
Sound: ****
Playability: ***
Fast Loader: None
Description: Gobble as much honey as you can
Price: £5.95
CCI Rating: ***

ICE HUNTER

Ice Hunter is based on the exploits of Thorak, the legendary Prince of Ice and this game centres on his adventures in a multi level cave (alternative phrase for several platforms!).

Each of the five cave levels contain blocks of ice and Thorak's aim is to collect all the blocks, float them down river to his igloo for storage and return to collect more from the five other caves.

To travel from level to level Thorak can slide up and down icicle poles, but he must be careful of thin ice patches. Once Thorak has passed over one, the ice breaks and falling through is fatal. However these holes do have their uses because the blocks can be dropped through.

Rampant arctic animals complicate matters – sea lions, dragons, birds chase Thorak round the cave and he can either drop blocks onto their heads, avoid them or scoff a power pill which paralyses them all. As the game progresses these animals get more numerous and aggressive and the levels start to move around. To do well, fast reflexes, tactical movement and a little luck is needed.

Ice Hunter made its debut at the Commodore show in June and was a great success in our games competition.

Title: Ice Hunter
Programmer: Belgium author Tequila Sunrise
Company; Anirog Software, 29 West Hill, Dartford, Kent. Tel: 0322 92518
Hardware: 64, cassette recorder or diskdrive, joystick optional
Type of game: Arcade
Graphics: ****
Sound: ***
Playability: ****
Fast Loader: Turbo
Description: Collect enough ice blocks, deal with weird arctic animals and build an igloo
Price: £6.95 (cassette), 9.95 (disk)
CCI Rating: ****

TURTLE JUMP

Ekim, the giant ant, has undergone intensive training in treasure recovery and is now in the Caribbean Islands putting his lessons into practise.

These islands are beyond the reach of pirates and the only way Ekim can approach them is to hitch a lift – anything solid will do – logs and turtles for instance. The turtles have slippery backs and move erratically, so Ekim loses a lot of energy travelling.

Fruit lying around the magic islands will replenish this energy. An energy bar across the screen indicates how much power Ekim has left.

Ekim's task is to jump into the treasure chest whilst it's open, grab lots of loot and jump out before it slams shut. Once enough treasure has been recovered the pirates return and collect it. The game is fraught with dangers and Ekim must be especially wary of the crocodiles which periodically glide across the screen. They cause all the turtles to dive and if he happens to be on one's back, a precious life is lost. In fact the magic islands keep disappearing as well.

Turtle Jump is pleasant and enjoyable, but not the sort of arcade game you write home about.

Title: Turtle Jump
Programmer; M. Charleville and R. Dagskold
Company: Romik, 272 Argyll Avenue, Slough, Berks. Tel: 75 71535
Hardware: 64, cassette recorder and joystick essential
Type of game: Arcade
Graphics: ***
Sound: ***
Playability: ***
Description: Steer Ekim across the slippery purple turtles and collect the treasure
Price: £6.99
CCI Rating: ***

STAR TROOPER

Not much to say about this one except that you've all seen it before!

The Star Trooper clad in a smart white suit carrying a jet pack on his back has the amazing task of destroying aliens as fast as they can come. Every so often he will run out of fuel, so an eye must be kept on the fuel meter at the bottom of the screen.

In total there are 24 different types of aliens and the aim is to defeat three of these enemy wves, avoid the meteor clusters and pass on to the next sector. Between each sector it is necessary to dock and refuel. There are six levels in all.

The graphics and sound were reasonable, the controls of the spaceman were good but the firing control wasn't really fast or spectacular enough for a game in which shooting is the only attraction. The program also has a Pavloda fast loading mechanism.

Title: Star Trooper
Programmer: Clifford Ramshaw
Company: Melbourne House, Castle Yard House, Castle Yard, Richmond, TW10 6TF. Tel: 01 940 6064
Hardware: 64, cassette recorder, joystick optional
Type of game: Arcade
Graphics: ***
Sound: ***
Playability: ***
Description: Destroy the aliens
Price: £5.95
CCI Rating: ***

LOCO

As you chug through the delightful countryside, bomb-bearing aeroplanes, air ships and explosive handcarts destroy the peaceful calm. Fast reflexes plus other arcade skills will be necessary to evade destruction.

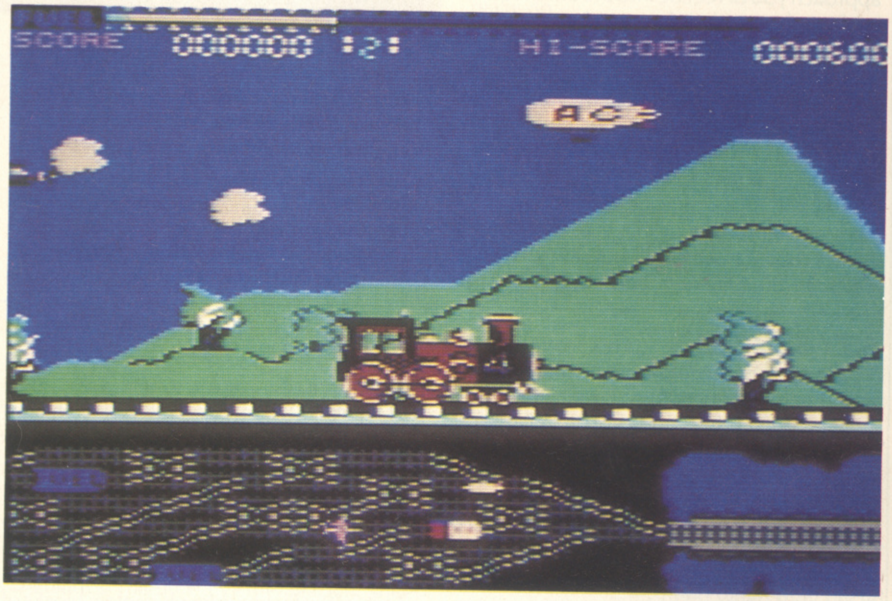
Two angles of the game are featured on the split screen – the side view of the locomotive puffing along the track and a bird's-eye view (radar scanner) of the six-track railway showing its fuel dumps and any oncoming airborne aircraft and handcarts.

You are in control of Loco and your two defenses are lethal smoke puffs and missiles from the front of the engine. There is a fuel limit and the aim is to destroy everything which could prove lethal and top up your fuel from the dumps by switching tracks.

Each time you pass through a station, a guard presents you with a flag and after five flags, the next level is attained. There are two skill levels – fast and slow and although the game looks easy, it isn't!

The sound and graphic effects are excellent. Loco is original and has enough lasting interest to occupy a few free hours.

Title: Loco
Programmer: Tony Crowther
Company: Alligata Software, 1 Orange Street, Sheffield S1 4DW. Tel: 0742 755005
Hardware: 64, cassette recorder, joystick optional
Type of game: Arcade
Graphics: *****
Sound: ****
Playability: ****
Description: Guide your locomotive and zap everything in sight
Price: £7.95
CCI Rating: ****



CAVELON

Clad in a red tunic decorated with a white cross, the brave knight sets out on a quest. Guinivere has been locked up in a castle by the Black Wizzard and you are in charge of the rescue operation.

Six levels of increasing complexity and difficulty challenge you and the aim on each one is to gather all the pieces of the door, signalling your elevation to the next floor. Knights and archers follow you around with arrows and balls which have to be dodged.

Points are awarded for picking up shields, other assorted mediaeval equipment and most important the Excaliburs which render all your assailents harmless for a few seconds. Save these for the final level when you encounter the wizard.

The graphics and sound are well done and control of the knight is fairly sensitive. Cavelon uses the fast loading Pavloda and is a fairly gentle game which doesn't require awesomely fast reflexes and split second timing.

Title: Cavelon
Programmer: John Hutchinson
Company: Ocean Software Ltd, Ocean House, 6 Central Street, Manchester 2. Tel: 061 832 9143
Hardware: 64, cassette recorder, joystick essential
Type of game: Arcade adventure
Graphics: ****
Sound: ****
Playability: ****
Description: Do battle with the evil knights and rescue Guinivere
Price; £6.90
CCI Rating: ****

NEW ORIGINAL GAMES FOR THE COMMODORE 64

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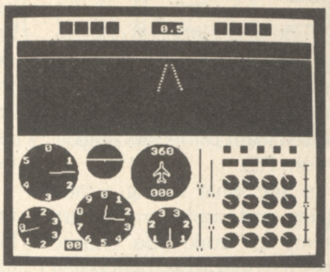

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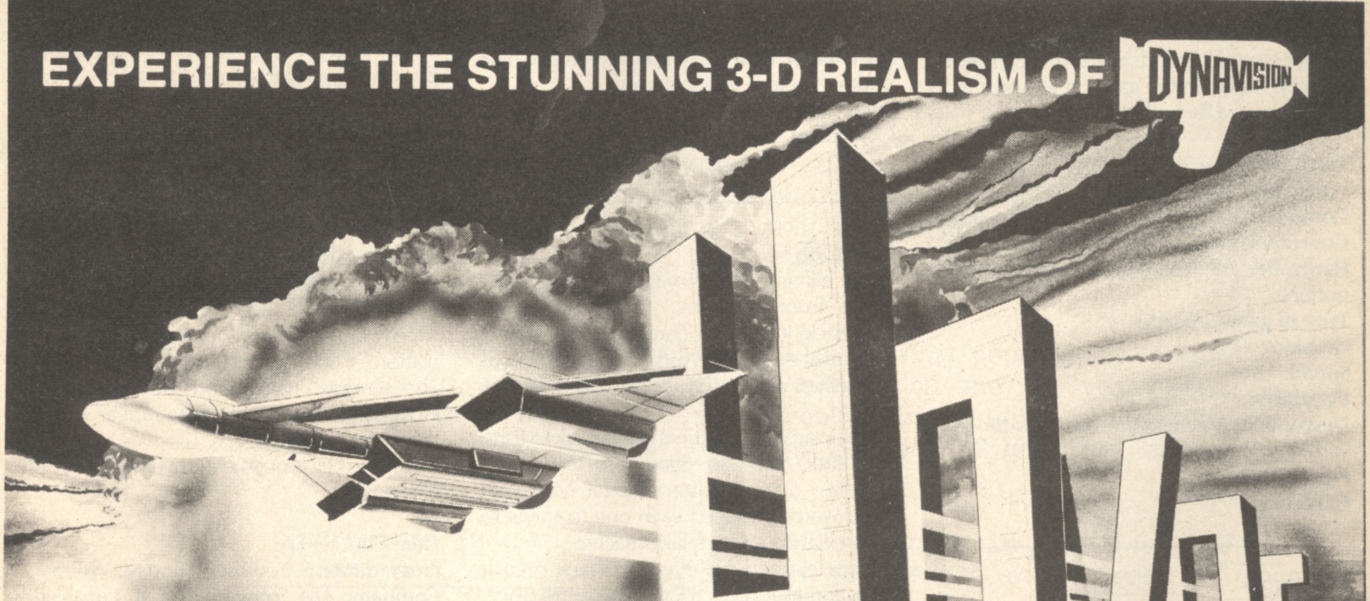
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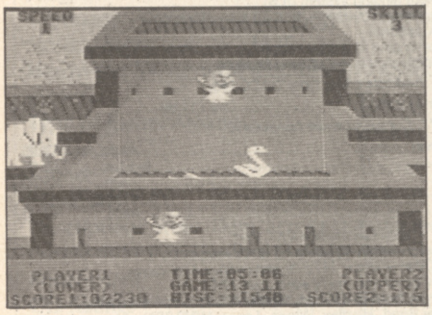
BATH TIME

Take two angels, one large elephant, one fish, one white swan, a boy with a bucket and one bath tub, mix them together, add a smattering of music and background with fountains and you've got yourself Bath Time, an original game concept from PSS.

It is difficult to see what lasting arcade attraction plugging and unplugging a bath has, but it seems to work! You choose whether you want to control the angel letting water into the bath or the one unplugging it and of course the speed and skill levels.

The aim is to keep the water level steady. Too high and the swan swims away, too low and the fish suffocates. To add masses of excitement to the game, an elephant trots along and drinks half the tub at a suck or a boy empties twenty gallons into the bath. There is nothing violent in the game at all and it is, as PSS suggest, a funny family game.



Title: Bath Time
Programmer: Canadian author
Company: PSS, 452 Stoney Stanton Road, Coventry CV6 5DG. Tel: 0203 81346
Hardware; 64, cassette recorder, joystick optional
Type of game: Arcade
Graphics: ****
Sound: ****
Playability: ****
Description: Maintain the bath's water level with your angel
Price: £7.95
CCI Rating: ****

SWOOP

This was originally a BBC game but the 64 version is a great improvement. Based on the arcade games Galaxians and Space Invaders, Swoop is entertaining and great fun to play.

You control a ground based laser cannon and are under attack from three species of birdmen – blue hawks, green merlins and red condors. They appear in formation and can attack either row by row or by swooping down individually.

The birdmen appear in successive waves and the levels get progressively more difficult. The red condors are extremely nasty and very fast while the blue hawks are a bit slower. In addition to their airborne tactics, these flying fiends drop eggs which, if not annihiliated, lie on the ground for five seconds and destroy anything which comes into contact.

The graphics are particularly interesting. In the background there are falling stars and if a bird is hit, it explodes and falls a short distance (rather like a firework in the sky). If your laser base gets zapped, the pieces fly all over the screen. The sounds are also good and accompany the game well.

There are four skill levels and although Swoop would get zero points for originality, a lot of care has gone towards making it exciting and fast.

Title: Swoop
Programmer: David Elliott
Company: Micro Power Ltd, Sheepscar House, 15 Sheepscar Street South, Leeds L57 1AD. Tel: 0532 458800
Hardware: 64, cassette recorder, joystick optional
Type of game: Arcade
Graphics; ****
Sound: ****
Playability: ****
Fast Loader: Power Load
Description: Destroy the red, green and blue birdmen before they get you
Price: £6.95
CCI Rating: ****

GYRUSS

Three billion miles from Earth and two time warps from Neptune, you suddenly get homesick! It's a long dangerous trip home, but you are equipped with five spaceships, as many lives and and a very strong defensive system.

Each warp is a stage in the trip back to Earth and after Neptune, there are four other planets – Uranus, Saturn, Jupiter, Mars with three warps between each one to travel to before Earth can be finally reached.

Space currents pull the ship into a circular orbit and as it races round the centre point, enemy Spaceships, Satellites and run away meteors materialise suddenly on the screen destroying you on contact or shooting out space bombs.

Altogether there are four different enemy formation and two types of satellite. If one of the satellites is shot, your ship is awarded double-fire power which effectively increases its point scoring capacity.

It is also possible to score lots of points at the Chance Stage. Four different enemy plane formations appear and if you can hit all forty ships, an extra ten thousand is added to your score.

Bach's Tocatta and Fugue in D minor (music) creates an exciting electric atmosphere and the ship reacts sensitively and accurately to joystick control. The game comes in cartridge form and will keep you entertained for hours.

Title: Gyruss
Programmer: Licenced from Konami Industry
Company: Parker Software, Palitoy, Owen Street, Coalville, Leicester.
Hardware: 64, joystick essential
Type of game: Arcade
Graphics: ****
Sound: *****
Playability: *****
Description: Negotiate all the obstacles and travel from Neptune to Earth
Price: £24.95 (cartridge)
CCI Rating: *****

CHUCKIE EGG

Like many others, Chuckie Egg is a platform game, but unlike some it does have a lot of charm.

The action is based in a farmyard where Hen House Harry must rush around collecting the dozen eggs and corn strewn around on each screen. His task is not easy because rather aggressive pink, green and orange ducklings wander about the screen. Their movement is fixed, so are quite easy to avoid, but on the nonth level his troubles multiply because mother duck waddles onto the scene and follows him everywhere.

There are six levels of difficulty ranging from 'those who prefer adventures' to 'suicidal maniacs' and the speed at which Hen House Harry races around the yard in the sixth level is incredibly fast and very funny to watch.

Hen House Harry can jump across gaps in platforms, up steps and down to lower levels. The screens change and their complexity increases, for example lifts appear on the third level.

Chuckie Egg is quite entertaining and worth playing.

Title: Chuckie Egg
Programmer: S. Townsend and M. Webb
Company: A&F Software, Unit 8, Canal Side Industrial Estate, Woodbine Street East, Rochdale, Lancashire. Tel: 0706 341111
Hardware: 64, cassette recorder, joystick optional
Type of game: Arcade
Graphics: ***
Sound: ***
Playability: ****
Fast Loader: Jet Load
Description: Collect 12 eggs from each screen
Price; £7.90
CCI Rating: ***

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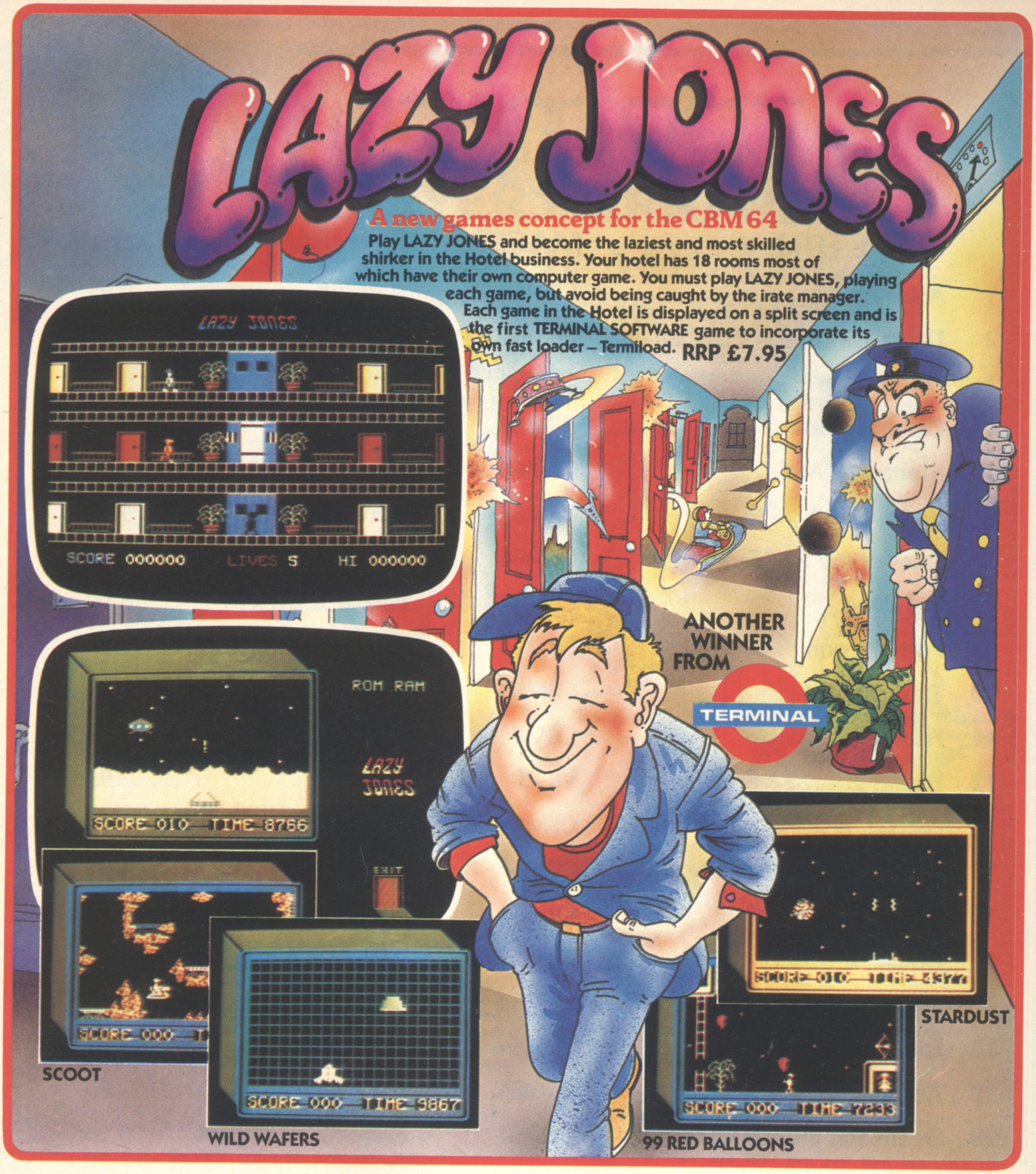
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Terminal Software, Derby House, Derby Street, Bury BL9 0NW, England. Tel. 061-761-4321

Joystick jamboree

Thinking about investing in a joystick? Sally Wood examines the pros and cons of a number of joysticks, acquiring a stiff wrist in the process

Most of the best fast action and arcade games require a joystick and for 64 and VIC 20 owners that can create some confusion because there are literally dozens to choose from.

Besides the usual switch type of joystick with the base, fire button(s) and stick, there are track balls, pressure sensitive joypads, mercury and even a remote-controlled joystick which is due to arrive in England very soon.

Everyones idea of a perfect joystick differs. Some like long, chunky sticks which lend themselves to rough treatment and heavy handedness while others have a light touch and prefer a small sensitive stick requiring only a gentle push.

We looked at a selection of 64 and VIC 20 compatible joysticks and played them with two games which we thought would best test their qualities – Exterminator from Bubble Bus, a typical megazap game which requires exact rapid fire and a lot of straightforward evasive movement and to test the fine movement qualities of the joysticks we used Killer Watt from Alligata. In this game, minute changes in speed and direction are essential – even moving a millimetre too far can mean instant death on the cavern walls.

As we tested the joysticks it became obvious that each one had its own definite style. Although they all have the same function, the variety in size, sensitivity and response were incredible. The prices also tended to vary enormously.

The qualities we looked for included the sticks sensitivity – whether it moved spaceships or laser bases accurately, how quickly, and whether you were left with severe wrist strain after a particularly long game of Exterminator. Other factors we thought important were whether it was suitable for both left and right handers, the number of fire buttons, their positioning, the speed of firing response, whether the joystick was equally usable held on a desk top and in your hand and its overall strength and ease of use. As we have said there is more to a joystick than meets the eye!

VOLTMACE
StarFighter
THE ULTIMATE JOYSTICK

Our list is not intended to be a comprehensive survey – but should give you some idea of what is available. A list at the end summarises our findings.

ATARI

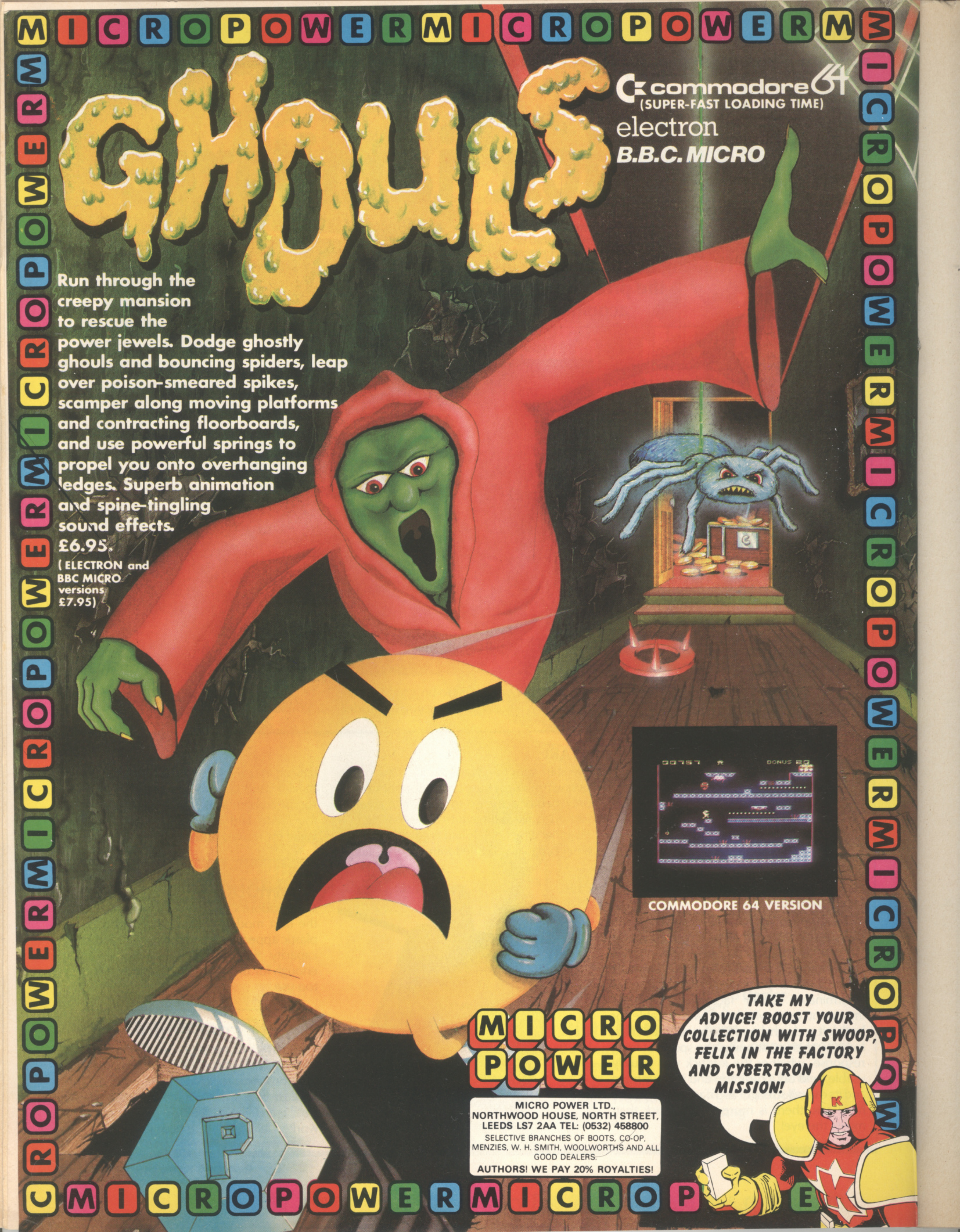
We start with the Atari joystick. One of the best with a sturdy base and a short stick which only needs a nudge to react immediately (although we did have trouble moving in a diagonal direction). It had an excellent rapid firing capability, but left handers may find it difficult to use as there is only one button on the left hand side. We can testify for this joystick's strength as we have been using it for four years and it still works well. Excellent value for money at £6.99.

COMMODORE

Commodore's own joystick was not one of the best models we tested. It had a cheap plastic appearance and the control and firing capacity were distinctly mediocre. Small enough for the hand, but too flimsy for desk top use.

PRO ACE COMPETITION

The Pro Ace Competition joystick seemed to be fairly solid with two fire buttons in strategic positions. The stick was slightly stiff at first. Because of its size it will probably suit people who really like to feel the handle move. It worked fairly well with both games.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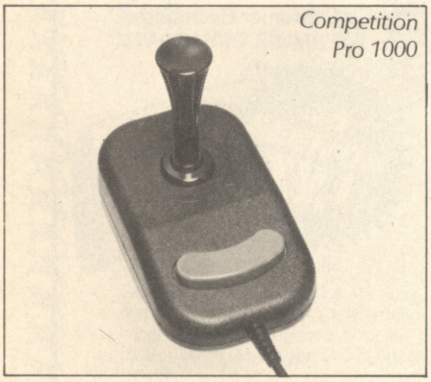
Starfighter

STARFIGHTER

The Starfighter, which claims to be the ultimate joystick – whatever that means!, has also lasted us a year of aggressive games playing and is still going strong! Both the fire button and the stubby stick responded sensitively, but again it may not suit a left hander. Equally comfortable and useable on the desk or in the hand, the Starfighter will satisfy both aggressive game playing and a lighter, more manipulative technique. Quite good value at £12.95.

WICO RED BALL & STRAIGHT STICK

Wico, like Kempston, have a number of similar models in their range. The Red Ball featured a globular red ball on top of a stick whilst the Straight Stick has a much more conservative handle. For £5 extra (£22.95) the Straight Stick is available with a three way grip. Both seem to be tough, comfortable to use and worked on all aspects of the two games.



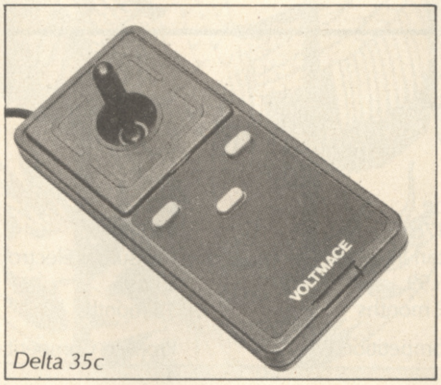
Competition Pro 1000

COMPETITION PRO 1000

The Competition Pro 1000, the 3000's little sister, had exactly the same base but less fire buttons. The narrow, much shorter stick was sensitive, accurate and did not leave you exhausted after a hard game. Despite the rubber feet on the base it can only really be operated in the hand and the fire button is big enough to be used by both right and left handers.

TRAK-BALL

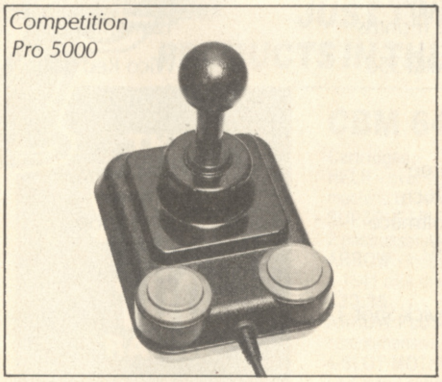
From the Trak-Ball, one of the more unusual controllers, we had a rather patchy response. It worked perfectly with Exterminator which only required straightforward movement, but in Killer Watt and games where changes in speed and direction are necessary it just wouldn't work. Both sturdy and strong, it is probably more suited to desktop rather than hand held use.



Delta 35c

DELTA 35C

The newest joystick, the Delta 35c was also one of the best. It has a little stick, three small fire buttons and resembles a television remote control unit. The manufacturers recommend that it be used while you are comfortably sat in your favourite armchair and in fact it's really very relaxing to use. Not recommended for heavy handed people as the stick only needs to be pushed around gently to elicit accurate quick response. The fire buttons were all conveniently placed, worked well and it was a real pleasure to use. Very good value at £10.



Competition Pro 5000

COMPETITION PRO 5000

A rather funny looking joystick, the Competition Pro 5000 featured a short stick with a bulbous control knob and two huge fire buttons on the base. It fitted comfortably in the hand and coped with both games. Its rapid firing action had a particularly good response.

Competition Pro 3000

COMPETITION PRO 3000

The Competition Pro 3000 from Kempston was one of the few joysticks with three fire buttons. Two of them were placed on the huge chunky handle with finger grips, but unfortunately they were not as responsive as the button on the base! The stick started to creak after a while, but it didn't make any difference to its relatively sensitive and quick response. It would suit people who like a lot of leverage from their joysticks, but we felt exhausted after a few games of Killer Watt because so much pushing and pulling was involved. Pulling back the handle often resulted in the fire button getting pressed because the button is so awkwardly placed. The base was too light for it to be used on a desk top successfully.

JOY-SENSOR

The Joy-Sensor looks the most professional of the lot, but unfortunately our high expectations were not met. Its rapid fire facility was good, but the controlling anything with the circular touch sensitive pad proved to be hard work. We had to concentrate harder on pressing the right area on the pad than on the game.

QUICK SHOT 1

The Quick Shot 1 joystick distinguished itself by sporting suckers on its feet and these worked quite well. The handle was long and nice to hold and it had a fire button on both the handle and on the top left hand side. Fairly good response with both games.

After looking at so many joysticks, you'd think that we would know the secrets of the perfect joystick, but unfortunately there is no such thing. Every model had its own particular feel and our advice to anyone thinking of investing is to consider our comments, so into every shop you can think of and persuade the shop assistant to let you play a selection of games. Really test the joysticks well before breaking your piggy bank. Happy Hunting!

COMPANY CONTACTS

Atart International, Atari House, Railway Terrace, Slough, Berks. Tel: 0753 33344.

Commodore Business Machines, 675 Ajax Avenue, Slough, Berks. Tel: 0753 74111.

Consumer Electronics, Failsworth, Manchester M35 0HS. Tel: 061 682 2339.

Kempston Micro Electronics, 180a Bedford Road, Kempston, Bedford. Tel: 0234 852997.

Voltmace Ltd, Park Drive, Baldock, Herts. Tel: 0462 894410.

Vulcan Electronics, 200 Brent Street, Hendon, London NW4. Tel: 01 203 6366.

Silica Shop, 1-4 The Mews, Hatherley Road, Sidcup, Kent. Tel: 01 309 1111.

Sumlock Electronics Services, 198 Deansgate, Manchester M33 NE. Tel: 061 834 4233.

Model:	Atari	Starfighter	Competition Pro 3000
Sensitivity:	4	4	3
Strength:	5	5	4
East of use:	5	5	4
Number of fire buttons:	one	one	three
Length of cable:	117cm	150cm	150cm
Supplier:	Atari International	Consumer Electronics	Kempston
Price:	£6.99	£12.95	£12.75
Warranty:	12 months	12 months	12 months

Model:	Competition Pro 1000	Pro-Ace Competition	Competition Pro 5000
Sensitivity:	4	4	5
Strength:	3	3	4
Ease of use:	4	4	5
Number of fire buttons:	one	two	two
Length of cable:	150cm	150cm	150cm
Supplier:	Kempston	Sumlock Electronic Services	Kempston
Price:	£10.99	£12.95	£13.50
Warranty:	12 months	2 years	12 months

Model:	Commodore	Trak-Ball	Joy Sensor
Sensitivity:	3	4	4
Strength:	2	4	4
Ease of use:	3	4	2
Number of fire buttons:	one	one	one
Length of cable:	120cms	90cms	180cms
Supplier:	Commodore	Atari	Consumer Electronics
Price:	£7.50	£39.99	£29.95
Warranty:	12 months	12 months	12 months

Model:	Delta 35c	Wico Red Ball	Wico Straight Stick
Sensitivity:	5	4	4
Strength:	4	4	3
Ease of use:	5	4	4
Number of fire buttons:	three	two	two
Length of cable:	126cm	150cm	150cm
Supplier:	Voltmace	Silica Shop	Silica Shop
Price:	£10	£19.95	£17.95
Warranty:		12 months	12 months

Model:	Quick Shot 1
Sensitivity:	4
Strength:	4
Ease of use:	4
Number of fire buttons:	two
Length of cable:	120cms
Supplier:	Vulcan Electronics
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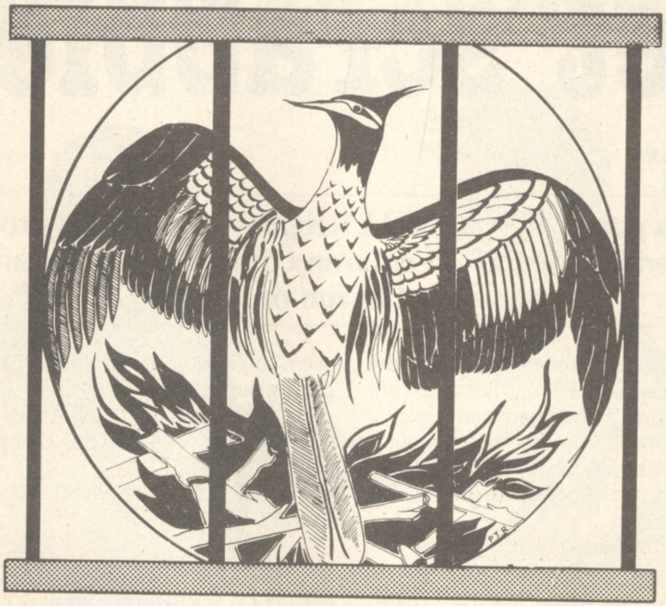
7: LORDS OF TIME. Our congratulations to Sue Gazzard for her super design of this new time travel adventure through the ages of world history. Chill to the Ice-age, go romin' with Caesars legions, shed light on the Dark Ages. etc. etc.



Level 9 adventures are available at £9.90 from good computer shops, or mail order from us at no extra charge. Send order, or SAE for catalogue, to the address below – and please describe your micro.

LEVEL 9 COMPUTING
Dept i, 229 Hughenden Road, High Wycombe, Bucks HP13 5PG

REVIEWS

"Adventures which have a fast response time, are spectacular in the amount of detail and number of locations, and are available to cassette owners . . Simply smashing!" *– Soft, Sept 83*

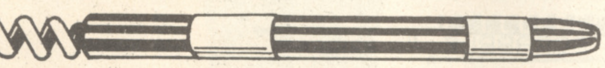
"**Colossal Adventure** is included in Practical Computing's top ten games choice for 1983: "Poetic and tough as hell." *– PC, Dec 83*

"To sum up, **Adventure Quest** is a wonderful program, fast, exciting and challenging. If you like adventures then this one is for you" *– NILUG issue 1.3*

"**Dungeon Adventure** is recommended. With more than 200 locations, 700 messages and 100 objects it will tease and delight!" *– Educational Computing, Nov 83*

"**Snowball** . . As in all Level 9's adventures, the real pleasure comes not from scoring points but in exploring the world in which the game is set and learning about its denziens . . this program goes to prove that the mental pictures conjured up by a good textual adventure can be far more vivid than the graphics available on home computers." *– Which Micro?, Feb 84*

"**Lords of Time.** This program, writen by newcomer Sue Gazzard, joins my favourite series and is an extremely good addition to Level 9's consistently good catalogue . . As we have come to expect from Level 9, the program is executed with wonderful style – none of those boring "You can't do that" messages! Highly recommended." *– PCW, 1st Feb 84*



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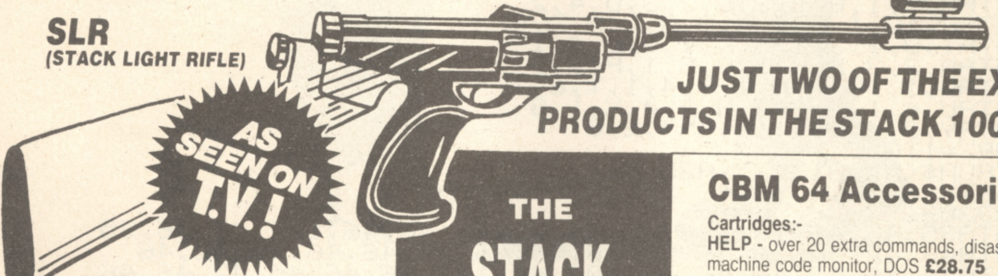
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Get scrabbled

Fancy a game of Scrabble? L Keighley sent us this program written for the PET 40 column computer, which can be converted to run on the 64.

This program is a computer version of the popular game SCRABBLE. The rules are exactly the same as the board game except for one addition. Because the computer controls the letters they have to be displayed on the screen, and of course can be seen by all players.

The letters are randomly distributed and seem to give out harder combinations than picking out of a bag.

The program is for a 40 column PET but it will work on the 64 with two changes:
line 210 P=1348
line 340 POKE53281,6:PRINT"[CLS]":POKE 53280,1

```
10 DIMN$(4),S%(4),L$(4),A$(27),A1%(27),A2%(27),
P1(8,15),L1%(15),L2%(15)
11 DIML3%(15),L4%(15),L5%(15),P9(15,15)
12 FORX=1TO4:E$(X)="N":NEXTX
20 REM SCRABBLE
30 REM AUTHOR - L KEIGHLEY
31 REM           90 GREEN BARN WAY
32 REM           BLACKROD
33 REM           BOLTON
34 REM           BL6 5TA
40 PRINT"▒▒▒▒▒▒▒▒▒▒██████████████████▁▁▁▁▁▁▁▁▁▁▁▁▁▁"
50 PRINT"██████████████▒ SCRABBLE "
60 PRINT"██████████████▁▁▁▁▁▁▁▁▁▁▁▁▁"
70 X=FRE(0):X=31743-X
80 PRINT"▒▒██████████CORE REQUIRED ";X
90 FORX=1TO2000:NEXTX
100 DATAA,9,1,B,2,3,C,2,3,D,4,2
110 DATAE,12,1,F,2,4,G,3,2,H,2,4
120 DATAI,9,1,J,1,8,K,1,5,L,4,1
130 DATAM,2,3,N,6,1,O,8,1,P,2,3
140 DATAQ,1,10,R,6,1,S,4,1,T,6,1
150 DATAU,4,1,V,2,4,W,2,4,X,1,8
160 DATAY,2,4,Z,1,10,"<",2,0
180 FORX=1TO27
190 READA$(X),A1%(X),A2%(X)
200 NEXTX
210 P=33092
220 DATA35,46,46,102,46,46,46,35,46,46,46,102,46,46,35
230 DATA46,42,46,46,46,90,46,46,46,90,46,46,46,42,46
240 DATA46,46,42,46,46,46,102,46,102,46,46,46,42,46,46
250 DATA102,46,46,42,46,46,46,102,46,46,46,42,46,46,102
260 DATA46,46,46,46,42,46,46,46,46,46,42,46,46,46,46
270 DATA46,90,46,46,46,90,46,46,46,90,46,46,46,90,46
280 DATA46,46,102,46,46,46,102,46,102,46,46,46,102,46,46
290 DATA35,46,46,102,46,46,46,42,46,46,46,102,46,46,35
300 FORX=1TO8:FORX1=1TO15
310 READP1(X,X1)
320 NEXTX1:NEXTX
330 GOSUB9500
340 PRINT"▒"
440 PRINT"▒SCORES:-";TAB(25);"TIME"
450 PRINT"▒▒▒▒"TAB(13);"111111    LETTERS:-"
460 PRINT"     123456789012345"
470 PRINT"    ┌───────────────┐"
480 FORX=1TO15
490 X$="":IFX<10THENX$=" "
500 PRINTX$;X;"█|";TAB(19);"|"
```

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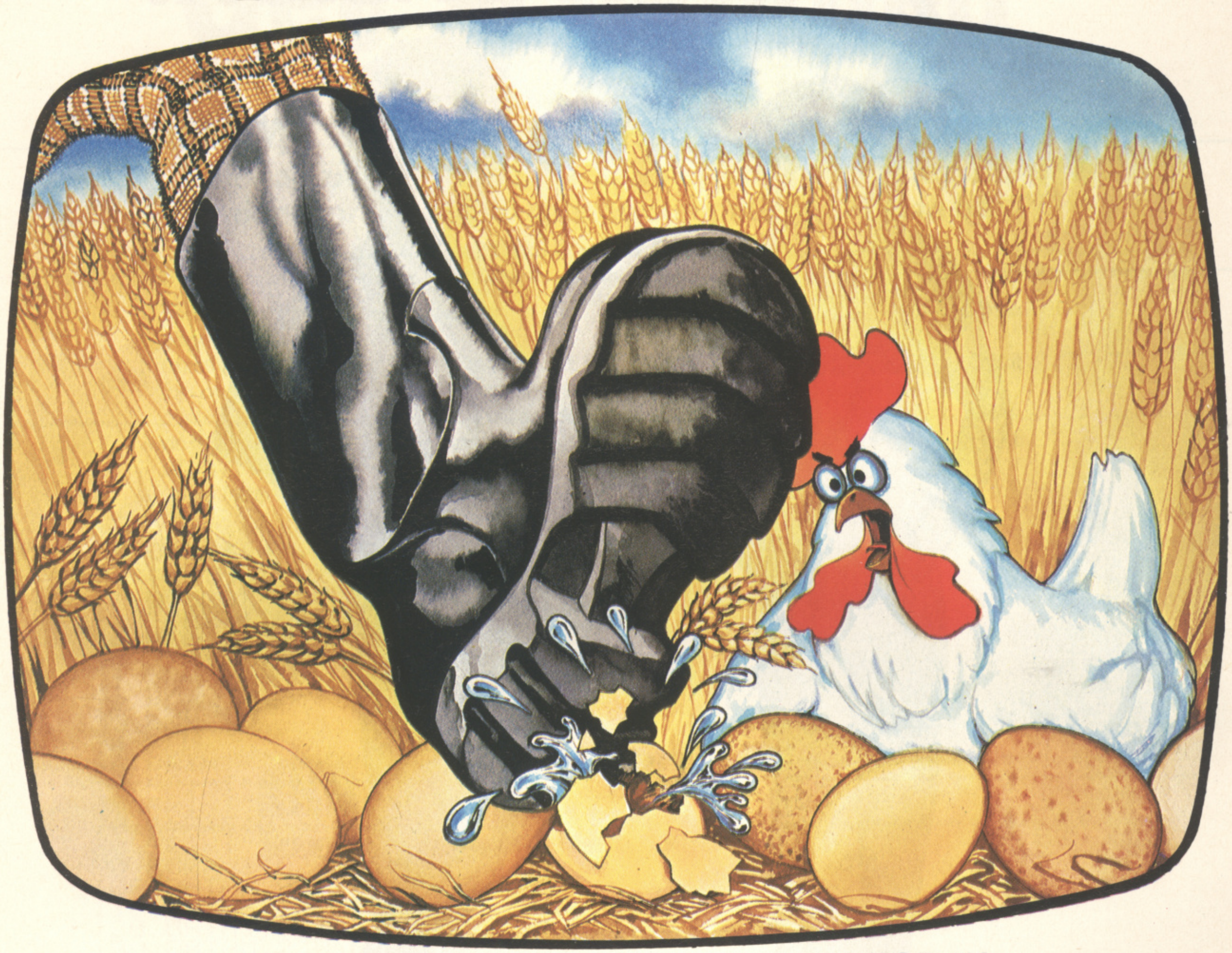

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```
510 NEXTX
520 PRINT"    └──────────────────┘"
530 T=1
540 FORX=1TO8:FORX1=1TO15
550 POKEP+(X*40)-40+X1-1,P1(X,X1)
560 NEXTX1:NEXTX
570 FORX=7TO1STEP-1:FORX1=1TO15
580 POKEP+((8-X+8)*40)-40+X1-1,P1(X,X1)
590 NEXTX1:NEXTX
595 IFS%(1)<>0THENRETURN
600 TI$="000000"
1000 FORM=1TOP2
1004 R1$="":R2$="":R3$="":R4$=""
1005 IFN$(M)="■"THEN2990
1010 ONMGOTO1030,1040,1050,1060
1020 STOP
1030 R1$="■":GOTO1070
1040 R2$="■":GOTO1070
1050 R3$="■":GOTO1070
1060 R4$="■":GOTO1070
1070 PRINT"■";
1080 FORX=1TOP2:X$="   "
1090 IFS%(X)>999THENX$="":GOTO1120
1100 IFS%(X)>99THENX$=" ":GOTO1120
1110 IFS%(X)>9THENX$="  "
1120 ONXGOTO1140,1150,1160,1170
1130 STOP
1140 R$=R1$:GOTO1180
1150 R$=R2$:GOTO1180
1160 R$=R3$:GOTO1180
1170 R$=R4$
1180 PRINTTAB(9);R$;N$(X);"   ";X$;S%(X);"■";
1181 X9$=LEFT$(TI$,2)+"."+MID$(TI$,3,2)+"."+RIGHT$(TI$,2)
1190 IFX>1THEN1210
1200 PRINTTAB(25);"TIME ";X9$;
1210 PRINT
1220 NEXTX
1230 PRINT"■■■"
1231 IFP2<4THENPRINT"■"
1240 IFQ1$="N"THEN1290
1250 FORX=1TOP2
1251 ONXGOTO1253,1254,1255,1256
1252 STOP
1253 R$=R1$:GOTO1260
1254 R$=R2$:GOTO1260
1255 R$=R3$:GOTO1260
1256 R$=R4$
1260 PRINTTAB(21);R$;N$(X);"   ";L$(X);
1261 FORX1=1TO7-LEN(L$(M))
1262 PRINT" ";
1263 NEXTX1
1264 PRINT"■   ■"
1270 NEXTX
1280 GOTO1300
1290 PRINT"■■"TAB(21);"NOT REQUIRED■■■"
1300 PRINTTAB(21);N$(M);" ENTER:-"
1310 INPUT"■■■■■■■■■■■■■■■■■■■■■DWN/ACRS=";D$
1311 IFD$="B"THEN4500
1312 IFD$="R"THEN4700
1313 IFD$="S"THEN4700
1314 IFD$="L"THEN4000
1315 E3$(M)="N"
1316 IFD$="E"THENPRINT"■":END
1317 IFD$="V"THEN4600
1320 IFD$<>"L"ANDD$<>"D"ANDD$<>"A"ANDD$<>"N"
THENPRINT"■■":GOTO1310
1325 IFD$="N"THENE$(M)="Y":GOTO2990
1330 INPUT"■■■■■■■■■■■■■■■■■■■■■START    =";L,C
1335 IFL=0ANDC=0THEN4500
1340 IFL<1ORL>15THEN1370
1350 IFC<1ORC>15THEN1370
1360 GOTO1380
1370 PRINT"■■":GOTO1330
1380 INPUT"■■■■■■■■■■■■■■■■■■■■■LETTERS =";W$
1385 IFW$="*"THEN4500
1390 L1=LEN(W$):W9$=W$:W8=L1
1391 IFL1>7THEN4100
```

```
1400 IFD$="A"ANDL1+C-1>15THEN4110
1410 IFD$="D"ANDL1+L-1>15THEN4120
1420 GOTO1440
1430 PRINT"☐☐☐":GOTO1310
1440 IFQ1$="N"THEN1500
1441 X1=0:W4$=L$(M)
1443 X1=X1+1
1445 IFX1>L1THEN1500
1447 X2=0
1449 X2=X2+1
1450 IFX2>LEN(W4$)THEN4130
1451 IFMID$(W$,X1,1)<>MID$(W4$,X2,1)THEN1449
1453 X$=""
1455 IFX2=1THEN1459
1457 X$=LEFT$(W4$,X2-1)
1459 IFX2=LEN(W4$)THEN1463
1461 X$=X$+RIGHT$(W4$,(LEN(W4$)-X2))
1463 W4$=X$
1465 GOTO1443
1500 FORX=1TO15:L1%(X)=1:L4%(X)=1:NEXT
1501 W1=1:F$="N":W9=0
1502 FORX=1TO15:L5%(X)=1:NEXTX
1510 IFD$="A"THEN1640
1520 S=P+C-1+((L-1)*40):X7=0
1530 FORX=1TO15
1531 X7=X7+1:IFX7>LEN(W$)THENX=15:GOTO1620
1540 X1=PEEK(S+((X-1)*40))
1545 IFX1>128ANDX>1THEN1631
1546 IFX1>128THEN4140
1550 IFX1=35THENW1=W1*3:L5%(X)=3
1560 IFX1=42THENW1=W1*2:L5%(X)=2
1580 IFX1=90THENL1%(X)=3
1590 IFX1=102THENL1%(X)=2
1620 NEXTX
1630 GOTO1680
1631 F$="Y"
1632 X$=LEFT$(W$,X-1):L4%(X)=0
1633 X$=X$+CHR$(X1-64)+RIGHT$(W$,L1-X+1)
1634 W$=X$:L1=L1+1:W9=W9+1
1635 GOTO1620
1640 S=P+C-1+((L-1)*40):X7=0
1650 FORX=1TO15
1651 X7=X7+1:IFX7>LEN(W$)THENX=15:GOTO1620
1660 X1=PEEK(S+X-1)
1670 GOTO1545
1680 FORX=1TO15:L2%(X)=1:L3%(X)=1:NEXTX
1690 IFD$="A"THEN1860
1691 FORX=1TOL1
1692 X1=S+((X-1)*40)+1:X2=S+((X-1)*40)-1
1693 X3=PEEK(X2):X4=PEEK(X1)
1694 IFX3>128ANDX4>128ANDL4%(X)=1THENL3%(X)=2
1695 IFX3>128ANDX4>128ANDL4%(X)=0THENL2%(X)=0
1696 IFX3>128ORX4>128THENF$="Y"
1697 IFX3>128ANDX4<128ANDL4%(X)<>0THENL3%(X)=2
1698 IFX3<128ANDX4>128ANDL4%(X)<>0THENL3%(X)=2
1699 NEXTX
1700 X1=S-40
1710 X2=PEEK(X1)
1720 IFX2<128THEN1780
1730 W$=W$+(CHR$(X2-64)):F$="Y"
1740 X1=X1-40
1750 X2=PEEK(X1)
1760 IFX2<128THEN1780
1770 GOTO1730
1780 X1=S+(L1*40)
1790 X2=PEEK(X1)
1791 IFX2<128THEN2011
1800 W$=W$+(CHR$(X2-64))
1820 X1=X1+40
1830 X2=PEEK(X1)
1840 IFX2<128THEN2020
1850 GOTO1800
1860 FORX=1TOL1
1861 X1=S+X-1+40:X2=S+X-1-40
1862 X3=PEEK(X2):X4=PEEK(X1)
1863 IFX3>128ANDX4>128ANDL4%(X)=1THENL3%(X)=2
```

```
1864 IFX3>128ANDX4>128ANDL4%(X)=0THENL2%(X)=0
1865 IFX3>128ORX4>128THENF$="Y"
1866 IFX3>128ANDX4<128ANDL4%(X)<>0THENL3%(X)=2
1867 IFX3<128ANDX4>128ANDL4%(X)<>0THENL3%(X)=2
1868 NEXTX
1869 X1=S-1
1870 X2=PEEK(X1)
1880 IFX2<128THEN1940
1890 W$=W$+(CHR$(X2-64)):F$="Y"
1900 X1=X1-1
1910 X2=PEEK(X1)
1920 IFX2<128THEN1940
1930 GOTO1890
1940 X1=S+L1
1950 X2=PEEK(X1)
1960 IFX2<128THEN2011
1970 W$=W$+(CHR$(X2-64))
1980 X1=X1+1
1990 X2=PEEK(X1)
2000 IFX2<128THEN2020
2010 GOTO1970
2011 IFF$="Y"THEN2020
2012 IFS%(1)=0THEN2020
2013 GOTO4150
2020 S1%=0:W7=0:FORX=1TOLEN(W$)
2030 X$=MID$(W$,X,1)
2040 GOSUB9000
2050 S1%=S1%+((W2*L1%(X))*W1)
2055 IFL3%(X)=2THENS1%=S1%+((W2*L1%(X))*L5%(X))
2060 NEXTX
2080 IFD$="A"THEN2280
2090 FORX=1TOL1
2100 X1=S+((X-1)*40)
2110 X1=X1+1
2120 X2=PEEK(X1)
2130 IFX2<128THEN2180
2140 X$=CHR$(X2-64)
2150 GOSUB9000
2160 S1%=S1%+(((W2*L2%(X))*L4%(X))*L5%(X))
2170 GOTO2110
2180 X1=S+((X-1)*40)
2190 X1=X1-1
2200 X2=PEEK(X1)
2210 IFX2<128THEN2260
2220 X$=CHR$(X2-64)
2230 GOSUB9000
2240 S1%=S1%+(((W2*L2%(X))*L4%(X))*L5%(X))
2250 GOTO2190
2260 NEXTX
2270 GOTO2460
2280 FORX=1TOL1
2290 X1=S+X-1
2300 X1=X1+40
2310 X2=PEEK(X1)
2320 IFX2<128THEN2370
2330 X$=CHR$(X2-64)
2340 GOSUB9000
2350 S1%=S1%+(((W2*L2%(X))*L4%(X))*L5%(X))
2360 GOTO2300
2370 X1=S+X-1
2380 X1=X1-40
2390 X2=PEEK(X1)
2400 IFX2<128THEN2450
2410 X$=CHR$(X2-64)
2420 GOSUB9000
2430 S1%=S1%+(((W2*L2%(X))*L4%(X))*L5%(X))
2440 GOTO2380
2450 NEXTX
2460 IFL1-W9=7THENS1%=S1%+50
2470 FORX=1TOL1
2480 X2=(ASC(MID$(W$,X,1)))+64
2490 IFD$="A"THEN2520
2495 A2(X)=PEEK(S+((X-1)*40)):A1(X)=S+((X-1)*40)
2500 POKES+((X-1)*40),X2
2510 GOTO2530
2520 A2(X)=PEEK(S+X-1):A1(X)=S+X-1
2525 POKES+X-1,X2
```

```
2530 NEXTX
2540 PRINT"▒";TAB(21);"SCORE = ";S1%
2550 PRINTTAB(21);"OK? (Y/N)                 "
2560 GETX$:IFX$=""THEN2560
2565 IFX$="Y"THENPRINT:GOTO2630
2570 IFX$<>"N"THEN2560
2580 PRINTTAB(21)"RETRY"
2590 FORX=1TOL1
2600 POKEA1(X),A2(X)
2610 NEXTX
2620 PRINT"▒▒▒▒▒▒▒▒";GOTO1310
2630 IFQ1$="N"THEN2940
2640 W3$="":X=0
2641 X=X+1
2645 X1=INT(RND(0)*27)
2650 IFA1%(X1)=0THENX2=0:GOTO2700
2660 W3$=W3$+A$(X1)
2670 A1%(X1)=A1%(X1)-1
2680 IFX<W8THEN2641
2681 IFF$="S"THENRETURN
2690 GOTO2800
2700 X1=X1+1
2710 IFX1>27THEN2740
2720 IFA1%(X1)=0THEN2700
2730 GOTO2660
2740 IFX2=1THEN2760
2750 X1=0:X2=1:GOTO2700
2760 IFX>1THEN2790
2770 PRINTTAB(21);"NO LETS"
2780 GOTO2830
2790 PRINTTAB(21);"ONLY ";W3$;" LEFT":GOTO2830
2800 PRINTTAB(21);"NEW LETS = ";W3$
2830 FORX=1TOL1-W9:X$=""
2840 FORX1=1TO7
2850 IFMID$(W9$,X,1)=MID$(L$(M),X1,1)THEN2910
2860 X$=X$+MID$(L$(M),X1,1)
2870 NEXTX1
2880 L$(M)=X$
2890 NEXTX
2900 GOTO2930
2910 X$=X$+MID$(L$(M),X1+1,7-X1)
2920 GOTO2880
2930 L$(M)=L$(M)+W3$
2940 S%(M)=S%(M)+S1%
2941 FORX=1TO15:FORX1=1TO15
2942 P9(X,X1)=PEEK(P+(X*40)-40+X1-1)
2943 NEXTX1:NEXTX
2950 PRINT"▒▒▒▒▒▒▒▒▒▒▒
2960 FORX=1TO10
2970 PRINTTAB(21);"                    "
2980 NEXTX
2990 NEXTM:E$="N"
3000 FORX=1TOP2
3010 IFE$(X)="N"THENE$="Y"
3020 NEXTX
3030 IFE$="Y"THEN1000
3040 PRINTTAB(21);"▒END OF GAME"
3050 PRINTTAB(21);"SUBTRACT FOLLWING"
3060 FORX=1TOP2
3070 PRINTTAB(21);N$(X);" ";
3071 X4=0
3080 FORX1=1TOLEN(L$(X))
3090 X$=MID$(L$(X),X1,1)
3100 GOSUB9000
3110 X4=X4-W2
3120 NEXTX1
3130 PRINTX4
3140 S%(X)=S%(X)-X4
3150 NEXTX
3160 X4=1:X%=S1%(1)
3170 FORX=2TOP2
3180 IFS%(X)>X%THENX%=S%(X):X4=X
3190 NEXTX
3200 PRINTTAB(21)"WINNER"
3210 PRINTTAB(21)"▒▒";N$(X4)
```

```
3220 PRINTTAB(21)"█ANOTHER GAME"
3230 GETX$:IFX$=""THEN3230
3240 IFX$="Y"THENRUN
3250 END
4000 INPUT"██████████████████████X/CHG =";W$
4010 L1=LEN(W$):W9$=W$:W8=L1
4020 W9=0:S1%=0
4030 FORX=1TOL1
4040 X$=MID$(W$,X,1)
4050 GOSUB9000
4060 A1%(X5)=A1%(X5)+1
4070 NEXTX
4080 GOTO2630
4100 PRINTTAB(21)"██WORD LENGTH":GOTO4200
4110 PRINTTAB(21)"██OUT OF BOARD-1":GOTO4200
4120 PRINTTAB(21)"██OUT OF BOARD-2":GOTO4200
4130 PRINTTAB(21)"██LETTERS":GOTO4200
4140 PRINTTAB(21)"██WRONG PLACE":GOTO4200
4150 PRINTTAB(21)"██NO CONNECT":GOTO4200
4200 FORX=1TO1000
4210 PRINT"██":GOTO1430
4500 GOSUB340
4510 FORX=1TO15:FORX1=1TO15
4520 POKEP+(X*40)-40+X1-1,P9(X,X1)
4530 NEXTX1:NEXTX
4550 GOTO1004
4600 PRINT"█"
4610 FORX=1TO15
4620 PRINTA$(X);"=";A2%(X)
4630 NEXTX:PRINT"█"
4640 FORX=16TO27
4650 PRINTTAB(10)A$(X);"=";A2%(X)
4660 NEXTX
4670 PRINTTAB(8)"██████PRESS ANY KEY"
4680 GETX$:IFX$=""THEN4680
4690 GOTO4500
4700 INPUT"█INPUT FILE NAME ";F$
4710 INPUT"█TAPE OR DISK (T/D)";X$
4720 INPUT"█DRIVE NO. (0/1/2)";D
4730 IFX$="D"THEN4770
4740 IFD$="R"THEN4760
4750 OPEN1,D,1,F$:GOTO4840
4760 OPEN1,D,0,F$:GOTO4890
4770 ID$="R"THEN4810
4780 IFD=0THENOPEN1,8,4,"0:"+F$+",SEQ,W":GOTO4840
4790 IFD=1THENOPEN1,8,4,"1:"+F$+",SEQ,W":GOTO4840
4800 GOTO4720
4810 IFD=0THENOPEN1,8,3,"0:"+F$",SEQ,R":GOTO4890
4820 IFD=1THENOPEN1,8,3,"1:"+F$",SEQ,R":GOTO4890
4830 GOTO4720
4840 FORX=1TO27:PRINT#1,A1%(X):NEXTX
4850 FORX=1TO15:FORX1=1TO15:PRINT#1,P9(X,X1):NEXTX1:NEXTX
4851 PRINT#1,P2
4860 FORX=1TOP2:PRINT#1,S%(X):NEXTX
4861 FORX=1TOP2:PRINT#1,L$(X):NEXTX
4862 FORX=1TOP2:PRINT#1,N$(X):NEXTX
4863 FORX=1TOP2:PRINT#1,E$(X):NEXTX
4870 PRINT#1,M
4875 PRINT#1,TI$:PRINT#1,Q1$
4880 CLOSE1:PRINT"█":END
4890 PRINT"██FILE "F$" OPEN"
4900 FORX=1TO27:INPUT#1,A1%(X):NEXTX
4910 FORX=1TO15:FORX1=1TO15:INPUT#1,P9(X,X1):NEXTX1:NEXTX
4911 INPUT#1,P2
4920 FORX=1TOP2:INPUT#1,S%(X):NEXTX
4921 FORX=1TOP2:INPUT#1,L$(X):NEXTX
4922 FORX=1TOP2:INPUT#1,N$(X):NEXTX
4923 FORX=1TOP2:INPUT#1,E$(X):NEXTX
4930 INPUT#1,M
4935 INPUT#1,TI$:INPUT#1,Q1$
4940 CLOSE1:GOTO4500
9000 FORX5=1TO27
9010 IFX$<>A$(X5)THEN9020
9011 W2=A2%(X5):GOTO9030
9020 NEXTX5
```

```
9030 RETURN
9500 PRINT"▒▒SCRABBLE"
9510 PRINT"─────────"
9520 PRINT"▒THIS COMPUTER VERSION OF ▒SCRABBLE▒"
9530 PRINT"CONTROLS THE BOARD AND THE SCORING. IF"
9540 PRINT"REQUIRED IT WILL ALSO CONTROL THE USE"
9550 PRINT"OF THE LETTERS. ALTHOUGH THIS GIVES A"
9560 PRINT"GAME WHERE EACH PLAYER CAN SEE THE "
9570 PRINT"OTHERS LETTERS."
9580 PRINT"▒▒ALL THE RULES ARE THE SAME AS FOR"
9590 PRINT"NORMAL ▒SCRABBLE▒."
9600 PRINT"▒1. NO FORIEGN WORDS."
9610 PRINT"2. NO NAMES."
9620 PRINT"3. NO ABBREVIATIONS."
9630 PRINT"▒▒▒▒▒▒▒▒▒PRESS ANY KEY"
9640 GETX$:IFX$=""THEN9640
9650 PRINT"▒▒SCRABBLE"
9670 PRINT"▒A NUMBER OF QUESTIONS ARE ASKED WHEN"
9680 PRINT"WORDS ARE TO BE ENTERED. THESE ARE:-"
9690 PRINT"▒1. ▒DWN/ACRS▒ ENTER ▒A▒,▒D▒,▒N▒,▒L▒,▒E▒,
▒S▒,▒R▒,▒B▒,▒V▒"
9700 PRINT"    D = DOWN"
9710 PRINT"    A = ACROSS"
9720 PRINT"    N = NO WORD POSSIBLE"
9721 PRINT"    L = EXCHANGE LETTERS"
9722 PRINT"    E = END GAME"
9723 PRINT"    S = SAVE THE GAME"
9724 PRINT"    R = RELOAD GAME"
9725 PRINT"    B = REPRINT BOARD"
9726 PRINT"        (ALSO 0,0 AT ▒START"
9727 PRINT"            * AT ▒LETTERS"
9728 PRINT"    V = VALUES OF LETTERS"
9730 PRINT"▒2. ▒START▒ L,C  ENTER THE LINE (L) AND"
9740 PRINT"   COLUMN (C) OF THE FIRST LETTER OF "
9750 PRINT"   THE WORD. THE ENTERIES MUST BE "
9760 PRINT"   SEPARATED BY A COMMA (,)."
9771 PRINT"▒▒▒▒▒▒▒▒▒▒▒PRESS ANY KEY"
9772 GETX$:IFX$=""THEN9772
9773 PRINT"▒▒SCRABBLE"
9774 PRINT"─────────"
9775 PRINT"▒3. ▒LETTERS▒ ENTER THE WORD."
9780 PRINT"▒4. THE COMPUTER WILL THEN SHOW THE "
9790 PRINT"   SCORE FOR THE WORD AND DISPLAY IT ON"
9800 PRINT"   THE SCREEN. IT WILL THEN ASK FOR"
9810 PRINT"   CONFIRMATION THAT ALL IS OK 'Y' OR"
9820 PRINT"   'N' SHOULD BE ENTERED."
9830 PRINT"▒5. ANY ERRORS WILL RETURN THE COMPUTER"
9840 PRINT"   TO THE LAST OR FIRST QUESTION."
9841 PRINT"▒6. ▒X/CHG▒ ENTER THE LETTERS TO BE"
9842 PRINT"   EXCHANGED."
9850 PRINT"▒▒▒▒▒▒▒▒▒▒PRESS ANY KEY"
9860 GETX$:IFX$=""THEN9860
9870 PRINT"▒DO YOU REQUIRE THE COMPUTER TO CONTROL"
9880 PRINT"THE LETTERS. (Y/N)"
9890 GETQ1$:IFQ1$=""THEN9890
9900 IFQ1$<>"N"ANDQ1$<>"Y"THEN9890
9910 PRINT"▒▒▒ENJOY YOUR GAME":FORX=1TO1500:NEXTX
9920 IFQ1$="Y"THEN10000
9930 FORX=1TO4:L$(X)="N":NEXTX
 10000 INPUT"▒NUMBER OF PLAYERS ";P2
 10010 FORX1=1TOP2
 10020 PRINT"▒INPUT NAME OF PLAYER "X1;
 10030 INPUTN$(X1)
 10040 NEXTX1
 10045 IFP2=4THEN10071
 10050 FORX1=P2+1TO4
 10060 N$(X1)="▒"
 10070 NEXTX1
 10071 IFQ1$="N"THEN10150
 10080 F$="S"
 10090 W8=7
 10100 FORM=1TOP2
 10110 GOSUB2640
 10120 L$(M)=W3$
 10130 NEXTM:L1=0:W9=0:W9$="":W8=0
 10140 F$="N"
 10150 FORX=1TO4:E$(X)="N":NEXT
 10160 RETURN
READY.
```

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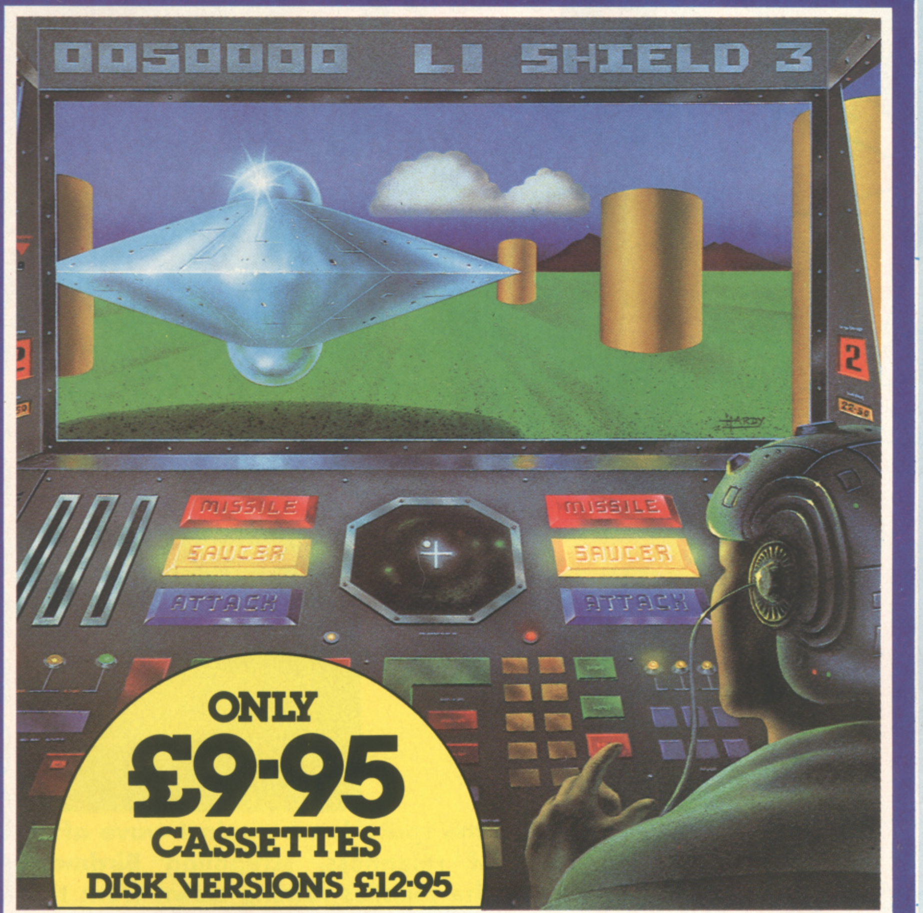

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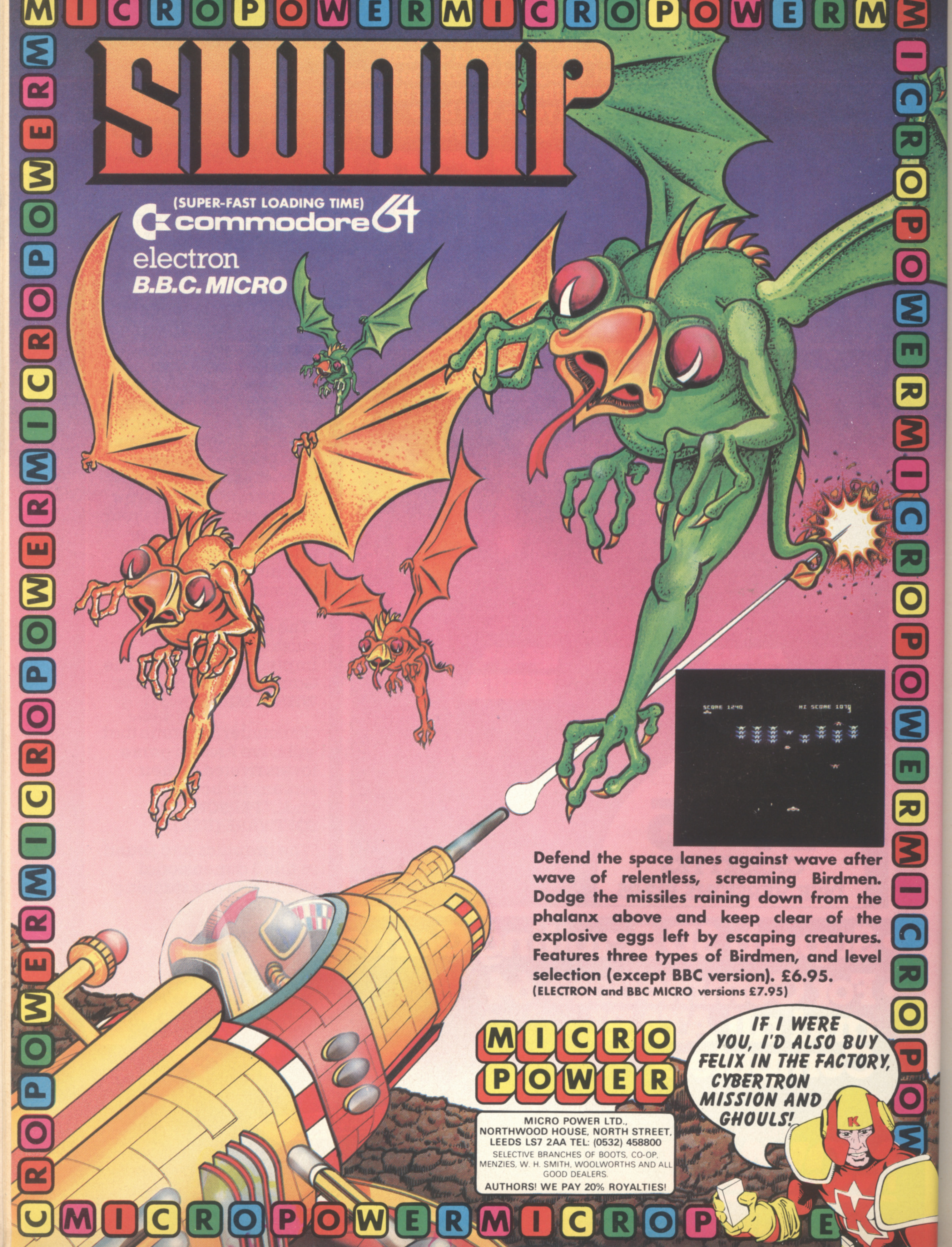
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By all accounts

Fed up with those 'polite' reminders from your bank manager? Keep track of your bank account with this program for the 64 called Bank Book, written by J R Christer.

The program is designed to keep records of chequebook transactions including standing orders.

Files are stored on the 1541 disk drive and hardcopies of statements etc, may be output to a Commodore printer.

Options in the program are:

(1) Enter Standing order
(2) Erase Standing order
(3) Deduct Standing orders
(4) Enter any Debits
(5) Enter any Credits
(6) Statement Printout
(7) Save Data to Disk
(8) Load Data from Disk
(F1) File Search by Name
(F3) File Search by Cheque Number
(F5) File Search by Date

```
1000 DATA32,241,183,134,87,32,241
1010 DATA183,134,88,224,40,176,6
1020 DATA165,87,201,26,144,3,76
1030 DATA72,178,32,102,229,165,87
1040 DATA240,9,169,17,32,22,231
1050 DATA198,87,208,247,165,88,240,9,169,29,32,22,231,198
1060 DATA88,208,247,32,253,174,76,160,170,-1
1070 DATA120,169,73,141,143,2,169,3,141,144,2,88,96,8
1080 DATA72,138,72,152,72,165,197,205,138,3,240,43,141,138
1090 DATA3,169,15,141,24,212,169,0,141,5,212,169,5,141
1100 DATA6,212,169,34,141,1,212,169,75,141,0,212,169,32
1110 DATA141,4,212,169,33,141,4,212,169,32,141,4,212,104
1120 DATA168,104,170,104,40,76,72,235,64,-1
1130 I=49264:SY=49264
1140 READA:IFA=-1THEN1160
1150 POKEI,A:I=I+1:GOTO1140
1160 I=828
1170 READA:IFA=-1GOTO1190
1180 POKEI,A:I=I+1:GOTO1170
1190 DIMST$(10,5),N$(500,5):PRINT"▢"
1200 SYS828
1210 POKE53280,12:POKE53281,12:CR$=CHR$(13):CN$="0":SO$="0":V$="0":SO=1
1220 OPEN15,8,15:PRINT#15,"I0"
1230 NC=1:SP$="                ":B0$="000000"
1240 PRINT"▢"
1250 SYSSY,4,4,"▦▞                                       ▦"
1260 SYSSY,5,4,"▞ ▦                                    ▞ ▦"
1270 SYSSY,6,4,"▞ ▦   BANK BOOK @ MONEY MANAGER  ▞ ▦"
1280 SYSSY,7,4,"▞ ▦                                    ▞ ▦"
1290 SYSSY,8,4,"▞ ▦    PROGRAM BY J.R.CHRISTER   ▞ ▦"
1300 SYSSY,9,4,"▞ ▦                                    ▞ ▦"
1310 SYSSY,10,4,"▞                                      ▦"
1320 SYSSY,20,12,"▞PRESS RETURN"
1330 GETZ$:IFZ$<>CHR$(13)THEN1330
1340 PRINT"▢"
1350 SYSSY,5,0,"▞/──────────────────────────────────────\"
1360 SYSSY,7,0,"▞|                                      |"
1370 SYSSY,8,0,"▞|                                      |"
1380 SYSSY,10,0,"▞|                                      |"
```

```
1390 SYSSY,11,0,"▒|                                      |"
1400 SYSSY,12,0,"▒|                                      |"
1410 SYSSY,13,0,"▒|                                      |"
1420 SYSSY,14,0,"▒|                                      |"
1430 SYSSY,15,0,"▒╰──────────────────────────────────────╯"
1440 SYSSY,6,0,"▒|PLEASE ENTER DAY AND MONTH E.G (21MAY)|"
1450 SYSSY,9,0,"▒|      START NEW STATEMENT (Y/N)      |"
1460 X=10:Y=7:GOSUB5780:DA$=Q$
1470 REM4350
1480 GETZ$:IFZ$=""THENSYSSY,9,34," "
1490 IFZ$=""THENSYSSY,9,34,"*":GOTO1480
1500 IFZ$="N"THEN1570
1510 IFZ$<>"Y"THEN1480
1520 CN=1:DL=1
1530 N$(CN,0)="BROUGHT FORWARD"
1540 N$(CN,1)=" ":N$(CN,2)=" ":N$(CN,3)=" ":N$(CN,4)=" ":
1550 PRINT"▒| PLEASE ENTER BALANCE BROUGHT FORWARD"
1560 X=10:Y=14:GOSUB5780:N$(CN,5)=Q$
1570 PRINT"▒▒"
1580 SYSSY,1,10,"▒╭────────────────────────────╮"
1590 SYSSY,2,10,"▒|(1) ENTER STANDING ORDER    |"
1600 SYSSY,3,9,"▒╭────────────────────────────╮|"
1610 SYSSY,4,9,"▒|(2) ERASE STANDING ORDER    ||"
1620 SYSSY,5,8,"▒╭────────────────────────────╮||"
1630 SYSSY,6,8,"▒|(3) DEDUCT STANDING ORDERS  |||"
1640 SYSSY,7,7,"▒╭────────────────────────────╮|||"
1650 SYSSY,8,7,"▒|(4) ENTER ANY DEBITS        |||╯"
1660 SYSSY,9,6,"▒╭────────────────────────────╮|||"
1670 SYSSY,10,6,"▒|(5) ENTER ANY DEPOSITS      |||╯"
1680 SYSSY,11,5,"▒╭────────────────────────────╮|||"
1690 SYSSY,12,5,"▒|(6) STATEMENT FRINTOUT      ||||"
1700 SYSSY,13,4,"▒╭────────────────────────────╮|||╯"
1710 SYSSY,14,4,"▒|(7) SAVE DATA TO DISK       ||||"
1720 SYSSY,15,3,"▒╭────────────────────────────╮|||╯"
1730 SYSSY,16,3,"▒|(8) LOAD DATA FROM DISK     ||||"
1740 SYSSY,17,2,"▒╭────────────────────────────╮|||╯"
1750 SYSSY,18,2,"▒|(9) END FROGRAM             ||||"
1760 SYSSY,19,2,"▒▒|  ▒╭──────────────────────────────────╮"
1770 SYSSY,20,2,"▒▒|  ▒|[F1] FILE SEARCH BY PAYEE NAME    |"
1780 SYSSY,21,2,"▒▒|  ▒|[F3] ▒FILE SEARCH BY CHEQUE NUMBER|";
1790 SYSSY,22,2,"▒▒|  ▒|[F5] ▒FILE SEARCH BY CHEQUE DATE  |";
1800 SYSSY,23,2,"▒▒|  ▒╰──────────────────────────────────╯";
1810 SYSSY,24,2,"▒▒|      PRESS REQUIRED KEY    |";
1820 SYSSY,25,2,"▒╰─────────────────────────────╯";
1830 Z$=""
1840 IFZ$=CHR$(133)THEN5480
1850 IFZ$=CHR$(134)THEN6110
1860 IFZ$=CHR$(135)THEN6370
1870 GETZ$:IFZ$<"1"ORZ$>"9"THEN1840
1880 PRINTASC(Z$)
1890 ONASC(Z$)-48 GOTO2470,2810,4190,3410,3090,3770,4330,4560,4900
1900
1910
1920 REM **************************
1930 REM *** CHECK DATA LOADED ***
1940 REM **************************
1950 IF DL =1THEN RETURN
1960 PRINT"▒▒▒╭───────────────────────────────────────╮"
1970 PRINT"▒|LOAD ROUTINE HAS NOT BEEN EXECUTED    |"
1980 PRINT"▒|                                       |"
1990 PRINT"▒|                                       |"
2000 PRINT"▒|                                       |"
2010 PRINT"▒╰───────────────────────────────────────╯"
2020 PRINT"▒PRESS (1) TO EXECUTED LOAD DATA ROUTINE"
2030 PRINT"▒---------------------------------------"
```

```
2040 PRINT"▒PRESS (9) TO CONTINUE PROGRAM EXECUTION"
2050 PRINT"▒+--------------------------------------"
2060 GETZ$:IFZ$="9"THEN DL=1:RETURN
2070 IFZ$<>"1"THEN2060
2080 RF=1:GOSUB 4580
2090 RETURN
2100 :
2110 :
2120 :
2130 REM****************************
2140 REM***READ ERROR CHANNEL ****
2150 INPUT#15,EN,EN$,ET,ES
2160 IFEN=0THENRETURN
2170 REM
2180 PRINT"▒▒▒▒▒▒/────────────────────────────────────────\"
2190 PRINT"▒▒▒|           ▒ERROR ON DISK▒             |"
2200 PRINT"▒▒▒\──────────────────────────────────────/"
2210 PRINT"          ";EN$
2220 CLOSE2
2230 FORI=1TO5000:NEXT:GOTO1570
2240 :
2250 :
2260 :
2270 REM***** AJUST DECIMAL ****
2280 X=0:FORE=1TOLEN(Q$)
2290 IFMID$(Q$,E,1)="."THENX=E
2300 NEXT
2310 IFX=LEN(Q$)-1THENQ$=Q$+"0"
2320 IFX=0THENQ$=Q$+".00"
2330 RETURN
2340 :
2350 :
2360 :
2370 REM******  TAB VALUE ******
2380 Q$=LEFT$(SP$,8-LEN(Q$))+Q$
2390 RETURN
2400 :
2410 :
2420 :
2430 :
2440 REM********************************
2450 REM*****ENTER STANDING ORDER*****
2460 REM********************************
2470 GOSUB1900:SO=SO+1:GOSUB2480:GOSUB2630:GOTO1570
2480 SYSSY,0,9,"▒▒/──────────────────\"
2490 SYSSY,1,9,"▒|ENTER STANDING ORDER|"
2500 SYSSY,2,9,"▒\──────────────────/"
2510 SYSSY,3,0,"▒/────────────────────────────────────────\";
2520 SYSSY,4,0,"▒|COMPANY          |                       |";
2530 SYSSY,5,0,"▒|........................................|";
2540 PRINT"▒|FIRST PAYMENT   |                    |";
2550 PRINT"▒|....................................|";
2560 PRINT"▒|NUMBER PAYMENTS |                   ▒|";
2570 PRINT"▒|....................................|";
2580 PRINT"▒|AMOUNT DUE      |                   ▒|";
2590 PRINT"▒|....................................|";
2600 PRINT"▒\────────────────────────────────────/";
2610 RETURN
2620 REM***** GET INFO FOR S/T'S ******
2630 X=17:Y=4:GOSUB5780:SO$(SO,0)=Q$
2640 X=17:Y=6:GOSUB5780:SO$(SO,1)=Q$
2650 X=17:Y=8:GOSUB5780:SO$(SO,2)=Q$
2660 X=17:Y=10:GOSUB5780:SO$(SO,3)=Q$
2670 V=V+VAL(SO$(SO,3)):V$=STR$(V)
2680 Q$=SO$(SO,3):GOSUB2270:SO$(SO,3)=Q$
```

```
2690 Q$=SO$(SO,3):GOSUB2380:SO$(SO,3)=Q$
2700 IFSO$(SO,1)=""THENSO$(SO,1)="N/A"
2710 IFSO$(SO,2)=""THENSO$(SO,2)="N/A"
2720 SYSSY,13,7,"▒DETAILS O.K   (Y/N)"
2730 GETZ$:IFZ$<>"Y"ANDZ$<>"N"THEN2730
2740 IFZ$="N"THENSO=SO-1:GOTO1570
2750 RETURN
2760 :
2770 :
2780 REM*****************************
2790 REM**** ERASE STANDING ORDER****
2800 REM*****************************
2810 GOSUB1900:GOSUB2480:
2820 SYSSY,1,9,"▒|ERASE STANDING ORDER|"
2830 X=17:Y=4:GOSUB5780:E$=Q$
2840 X=0:FORI=1TOSO
2850 IFE$=SO$(I,0)THENR=I
2860 NEXT
2870 IFR=0THENPRINT"▒▶▶▶▶▶▶▶▶▶▶▶▶▶FILE NOT FOUND":GOTO3030
2880 SYSSY,6,17,"";SO$(R,1)
2890 SYSSY,8,17,"";SO$(R,2)
2900 SYSSY,10,17,"";SO$(R,3)
2910 SYSSY,13,8,"▒▤[1]=ERASE   :[9]=CONTINUE"
2920 GETZ$:IFZ$=""THEN2920
2930 IFZ$="9"THEN3020
2940 IFZ$<>"1"THEN2920
2950 V=V-VAL(SO$(SO,3)):V$=STR$(V)
2960 FORI=RTOSO-1
2970 SO$(I,0)=SO$(I+1,0)
2980 SO$(I,1)=SO$(I+1,1)
2990 SO$(I,2)=SO$(I+1,2)
3000 SO$(I,3)=SO$(I+1,3)
3010 NEXT:SO=SO-1
3020 REM
3030 GOTO1570
3040 :
3050 :
3060 REM*************************
3070 REM***ENTER ANY DEPOSITS****
3080 REM*************************
3090 GOSUB1900
3100 CN=CN+1
3110 SYSSY,0,6,"▓▒╭────────────────────────╮"
3120 SYSSY,1,6,"▒| . ENTER ANY DEPOSITS . |"
3130 SYSSY,2,6,"▒╰────────────────────────╯"
3140 SYSSY,3,1,"▒╭─────────────────────────────────────╮"
3150 SYSSY,4,1,"▒| NAME       |                         |"
3160 SYSSY,5,1,"▒| DETAILS    |                         |"
3170 SYSSY,6,1,"▒| AMOUNT     |                         |"
3180 SYSSY,7,1,"▒| DATE       |                         |"
3190 SYSSY,8,1,"▒╰─────────────────────────────────────╯"
3200 Y=4:X=14:GOSUB5780:N$(CN,0)=Q$
3210 Y=5:X=14:GOSUB5780:N$(CN,1)=Q$
3220 Y=6:X=14:GOSUB5780:N$(CN,3)=Q$
3230 Y=7:X=14:GOSUB5780:N$(CN,2)=Q$
3240 IFN$(CN,1)=""THENN$(CN,1)="WAGES"
3250 SYSSY,9,6,"▒|DETAILS O.K  (Y/N)|"
3260 SYSSY,10,6,"▒╰───────────────────╯"
3270 N$(CN,0)=N$(CN,0)+"*"
3280 B=VAL(N$(CN-1,5)):D=VAL(N$(CN,3)):B=B+D
3290 B=INT((B+0.005)*100):B=B/100
3300 N$(CN,5)=STR$(B)
3310 Q$=N$(CN,5):GOSUB2270:N$(CN,5)=Q$
3320 N$(CN,4)=" "
3330 Z$="":GETZ$:IFZ$=""THEN3330
```

```
3340 IFZ$<>"Y"THENCN=CN-1:GOTO1570
3350 GOTO1570
3360 :
3370 :
3380 REM*************************
3390 REM*****ENTER ANY DEBITS****
3400 REM*************************
3410 GOSUB1900
3420 CN=CN+1
3430 SYSSY,0,13,"■◪╭────────────────╮"
3440 SYSSY,1,13,"◪|ENTER ANY DEBITS |"
3450 SYSSY,2,13,"◪╰────────────────╯"
3460 SYSSY,4,2,"◪╭─────────────────────────────────────────────╮"
3470 SYSSY,5,2,"◪|                   BROUGHT FORWARD |          |"
3480 SYSSY,6,2,"◪|PAYABLE TO |                       |"
3490 SYSSY,7,2,"◪|                                             |"
3500 SYSSY,8,2,"◪|                            AMOUNT |          |"
3510 SYSSY,9,2,"◪|CHEQUE NO|        BALANCE|          |"
3520 SYSSY,10,2,"◪|DATE     |                         |"
3530 SYSSY,11,2,"◪╰─────────────────────────────────────────────╯"
3540 SYSSY,5,33,"";N$(CN-1,5):Y=6:X=16:GOSUB5780:N$(CN,0)=Q$
3550 Y=8:X=29:GOSUB5780:N$(CN,4)=Q$
3560 Y=9:X=14:GOSUB5780:N$(CN,1)=Q$
3570 Y=10:X=14:GOSUB5780:N$(CN,2)=Q$
3580 B=VAL(N$(CN-1,5)):D=VAL(N$(CN,4)):B=B-D
3590 B=INT((B+0.005)*100):B=B/100
3600 N$(CN,5)=STR$(B)
3610 Q$=N$(CN,5):GOSUB2270:N$(CN,5)=Q$
3620 Q$=N$(CN,4):GOSUB2270:N$(CN,4)=Q$
3630 N$(CN,3)=" "
3640 N$(CN,1)=LEFT$(B0$,6-LEN(N$(CN,1)))+N$(CN,1)
3650 SYSSY,9,30,"";N$(CN,5)
3660 SYSSY,12,8,"◪|DETAILS O.K  (Y/N)|"
3670 SYSSY,13,8,"◪╰──────────────────╯"
3680 Z$="":GETZ$:IFZ$=""THENGOTO3680
3690 IFZ$<>"Y"THENCN=CN-1:GOTO1570
3700 GOTO1570
3710 :
3720 :
3730 :
3740 REM***************************
3750 REM***STATEMENT PRINTOUT***
3760 REM*************************
3770 GOSUB4960:IFSC=1THENGOTO1570
3780 GOSUB1900:GOSUB 4090:OPEN4,4:IFLS=1THENLS=0:GOTO3940
3790 PRINT#4,CHR$(13)CHR$(16)"32STANDING  ORDERS"
3800 PRINT#4,CHR$(16)"32────────────────"CHR$(13)
3810 PRINT#4,"NAME"CHR$(16)"20  DATE"CHR$(16)"37 MONTHS"CHR$(16)"58 AMOUNT"
3820 PRINT#4,"────"CHR$(16)"20  ────"CHR$(16)"37 ──────"CHR$(16)"58 ──────"
3830 V=0
3840 FORI=1TOSO
3850 PRINT#4,SO$(I,0)CHR$(16)"20"SO$(I,1)CHR$(16)"40"SO$(I,2);
3860 PRINT#4,CHR$(16)"60"SO$(I,3)
3870 V=V+VAL(SO$(I,3))
3880 NEXT
3890 V$=STR$(V):V$=RIGHT$(V$,LEN(V$)-1)
3900 Q$=V$:GOSUB2270:V$=Q$
3910 Q$=V$:GOSUB2380:V$=Q$
3920 PRINT#4,CHR$(16)"60────────"
3930 PRINT#4,CHR$(16)"50TOTAL"CHR$(16)"60"V$
3940 PRINT#4,CHR$(13)
3950 PRINT#4,"PAYABLE TO";CHR$(16)"20CHEQUE NO";CHR$(16)"34 DATE";
3960 PRINT#4,CHR$(16)"46DEPOSIT";CHR$(16)"60DEBIT"CHR$(16)"70BALANCE"
3970 PRINT#4,"────────────────────────────────────────────";
3980 PRINT#4,"────────────────────────────────────"
```

```
3990 FORI=1TOCN
4000 Q$=N$(I,3):GOSUB2370:N$(I,3)=Q$
4010 Q$=N$(I,4):GOSUB2370:N$(I,4)=Q$
4020 Q$=N$(I,5):GOSUB2370:N$(I,5)=Q$
4030 PRINT#4,N$(I,0)CHR$(16)"20"N$(I,1)CHR$(16)"34"N$(I,2)CHR$(16)"46";
4040 PRINT#4,N$(I,3)CHR$(16)"60"N$(I,4)CHR$(16)"70"N$(I,5)
4050 NEXT
4060 PRINT#4,CHR$(16)"70----------"
4070 PRINT#4,CHR$(16)"60BALANCE"CHR$(16)"70"N$(I-1,5)
4080 PRINT#4:CLOSE4:GOTO1570
4090 PRINT"■■■■■■■■LIST STANDING ORDERS (Y/N)"
4100 GETZ$:IFZ$=""THEN4100
4110 IFZ$="N"THENLS=1
4120 RETURN
4130 :
4140 :
4150 REM******************************
4160 REM**** DEDUCT STANDING ORDERS **
4170 REM******************************
4180 :
4190 GOSUB1900:PRINT"■■■■■■■■■■■■DEDUCT STANDING ORDERS"
4200 PRINT"           ---------------------"
4210 GOTO5320
4220 Q$=N$(CN,5):GOSUB2270:N$(CN,5)=Q$
4230 Q$=N$(CN,5):GOSUB2380:N$(CN,5)=Q$
4240 Q$=N$(CN,4):GOSUB2270:N$(CN,4)=Q$
4250 Q$=N$(CN,4):GOSUB2380:N$(CN,4)=Q$
4260 RETURN
4270 :
4280 :
4290 :
4300 REM*******************************
4310 REM******* SAVE DATA TO DISK *****
4320 REM*******************************
4330 GOSUB1900: PRINT"■                        SAVE DATA TO DISK"
4340 PRINT"            -------------------"
4350 PRINT"■■         PLACE DATA DISK IN DRIVE"
4360 PRINT"              THEN PRESS ENTER"
4370 GETZ$:IFZ$<>CHR$(13)THEN4370
4380 OPEN2,8,2,"@0:"+DA$+",S,W"
4390 GOSUB2130
4400 PRINT#2,V$;CR$;STR$(SO);CR$;STR$(CN);CR$;
4410 IFSO=0THEN4460
4420 I=1
4430 IFI>SOTHEN4460
4440 PRINT#2,SO$(I,0);CR$;SO$(I,1);CR$;SO$(I,2);CR$;SO$(I,3)
4450 I=I+1:GOTO4430
4460 I=1
4470 IFI>CNTHEN4510
4480 PRINT#2,N$(I,0);CR$;N$(I,1);CR$;N$(I,2);CR$;
4490 PRINT#2,N$(I,3);CR$;N$(I,4);CR$;N$(I,5)
4500 I=I+1:GOTO4470
4510 CLOSE2
4520 GOTO1570
4530 REM*****************************
4540 REM**** LOAD DATA FORM DISK ****
4550 REM*****************************
4560 :
4570 :
4580 PRINT"■■■■╭---------------------------------------╮";
4590 PRINT"■|COMMODORE                      1541    |";
4600 PRINT"■|        ■╭-----------------------╮■      |";
4610 PRINT"■|        ■| LOAD DATA FROM DISK  |■      |";
4620 PRINT"■|        ■╰-----------------------╯■      |";
4630 PRINT"■|                                      |";
```

BASIC PROGRAMMING

```
4640 PRINT"▚\──────────────────────────────────────────/";
4650 PRINT"▚▚■            PLACE DATA DISK IN DRIVE"
4660 PRINT"                THEN PRESS ENTER"
4670 GETZ$:IFZ$<>CHR$(13)THEN4670
4680 PRINT"TT]▚/───────────────────────────────────────\";
4690 PRINT"▚|  PRESS [F1] TO LIST DIRECTORY           |";
4700 PRINT"▚|  PRESS [F7] TO CONTINUE                 |";
4710 PRINT"▚\──────────────────────────────────────────/";
4720 GETZ$:IFZ$=CHR$(133)THENGOSUB5870:GOTO4740
4730 IFZ$<>CHR$(136)THEN4720
4740 PRINT:PRINT"▶▶▶▶▶▶▶▶▶▶ENTER FILE REQUIRED":INPUT"▶▶▶▶▶▶▶▶▶▶";MR$
4750 OPEN2,8,2,"0:"+MR$+",S,R"
4760 GOSUB2130
4770 INPUT#2,V$,SO$,CN$:SO=VAL(SO$):CN=VAL(CN$)
4780 IFSO=0THEN4830
4790 I=1
4800 IFI>SOTHEN4830
4810 INPUT#2,SO$(I,0),SO$(I,1),SO$(I,2),SO$(I,3)
4820 I=I+1:GOTO4800
4830 I=1
4840 IFI>CNTHEN4870
4850 INPUT#2,N$(I,0),N$(I,1),N$(I,2),N$(I,3),N$(I,4),N$(I,5)
4860 I=I+1:GOTO4840
4870 CLOSE2
4880 DL=1
4885 IFRF=1THENRF=0:RETURN
4890 GOTO1570
4900 CLOSE4:CLOSE2:CLOSE15:END
4910 :
4920 :
4930 REM*************************
4940 REM***SCREEN OR PRINTER*****
4950 REM*************************
4960 PRINT"]▚▚/─────────────────────────────────────────\"
4970 PRINT"▚|   OUTPUT TO SCREEN OR PRINTER (S/P)|"
4980 PRINT"▚\──────────────────────────────────────/"
4990 GETZ$:IFZ$=""THEN4990
5000 IFZ$="P"THENRETURN
5010 IFZ$<>"S"THEN4990
5020 PRINT"▚▚/──────────────────────────────────────\"
5030 PRINT"▚|  LIST STANDING ORDERS (Y/N)           |"
5040 PRINT"▚\──────────────────────────────────────/"
5050 GETZ$:IFZ$="N"THEN5170
5060 IFZ$<>"Y"THEN5050
5070 FORR=1TOSO
5080 GOSUB2480
5090 SYSSY,1,9,"▚ILIST STANDING ORDERS|"
5100 SYSSY,4,17,"";SO$(R,0)
5110 SYSSY,6,17,"";SO$(R,1)
5120 SYSSY,8,17,"";SO$(R,2)
5130 SYSSY,10,17,"";SO$(R,3)
5140 SYSSY,13,10,"PRESS ▚RETURN■ TO CONTINUE"
5150 GETZ$:IFZ$<>CHR$(13)THEN5150
5160 NEXT
5170 PRINT"]"
5180 FORI=1TOCN:PRINT"]"
5190 PRINT"▚▚▶▶▶▶▶▶▶▶▶▶▶STATMENT ENTRY NO";I
5200 PRINT:PRINT
5210 PRINT"PAYABLE TO",N$(I,0)
5220 PRINT"CHEQUE NO ",N$(I,1)
5230 PRINT"DATE      ",N$(I,2)
5240 PRINT"DEPOSIT   ",N$(I,3)
5250 PRINT"DEBIT     ",N$(I,4)
5260 PRINT"BALANCE   ",N$(I,5)
5270 PRINT"───────────────────────────────────────"
```

```
5280 PRINT"▼▼▼▼►►►►►PRESS ▣RETURN■ TO CONTINUE"
5290 GETZ$:IFZ$<>CHR$(13)THEN5290
5300 NEXT
5310 GOTO1570
5320 REM ******************************
5330 REM ** PUT ST´S INTO STATEMENT **
5340 REM ******************************
5350 FORI=1TOSO
5360 PRINTI
5370 CN=CN+1
5380 N$(CN,0)=SO$(I,0)
5390 N$(CN,1)="S/ORDER"
5400 N$(CN,2)=SO$(I,1)
5410 N$(CN,3)=" "
5420 N$(CN,4)=SO$(I,3)
5430 N$(CN,5)=STR$(VAL(N$(CN-1,5))-VAL(SO$(I,3)))
5440 GOSUB4220
5450 NEXT:GOTO1570
5460 REM*********************
5470 REM** SEARCH BY NAME **
5480 REM*********************
5490 PRINT"□▼▼▼▼►►►►►►►►▣PLEASE ENTER NAME TO BE FOUND"
5500 PRINT"►►►►►►►►";:INPUTN$
5510 PRINT"HARDCOPY (Y/N)"
5520 GETH$:IFH$=""THEN5520
5530 IFH$="Y"THENHC=1
5540 X=0:FORI=1TOCN
5550 IFN$=N$(I,0)THENX=I:GOSUB5620
5560 NEXT
5570 IFX>0THEN5610
5580 PRINT"▼▼▼▼►►►►►►►►►►►►►►▣FILE NOT FOUND"
5590 PRINT"▼▼▼▼▼▼►►►►►PRESS RETURN TO CONTINUE"
5600 GETZ$:IFZ$<>CHR$(13)THEN5600
5610 HC=0:GOTO1570
5620 IFX>0ANDHC=1THENGOSUB6290:RETURN
5630 PRINT"□"
5640 PRINT"⌂▼▼►►►►►►►►►►►►STATMENT ENTRY NO";I
5650 PRINT:PRINT
5660 PRINT"PAYABLE TO",N$(X,0)
5670 PRINT"CHEQUE NO ",N$(X,1)
5680 PRINT"DATE      ",N$(X,2)
5690 PRINT"DEPOSIT   ",N$(X,3)
5700 PRINT"DEBIT     ",N$(X,4)
5710 PRINT"BALANCE   ",N$(X,5)
5720 PRINT"────────────────────────────────────────"
5730 IFHC=1THEN65535
5740 PRINT"PRESS RETURN TO CONTINUE"
5750 GETZ$:IFZ$<>CHR$(13)THEN5750
5760 RETURN
5770 REM****** PRINT AT ********
5780 Q$=""
5790 SYSSY,Y,X,"* ";:SYSSY,Y,X,"";
5800 GETZ$:IFZ$=""THENSYSSY,Y,X,"  ";:GOTO5790
5810 IFZ$=CHR$(20)THENX=X-1::Q$=LEFT$(Q$,LEN(Q$)-1):GOTO5790
5820 IFZ$=CHR$(13)THENSYSSY,Y,X," ";:RETURN
5830 PRINTZ$;:X=X+1:Q$=Q$+Z$
5840 IFX>=38THENQ$=(LEFT$(Q$,LEN(Q$)-1)):RETURN
5850 GOTO5790
5860 REM***** GET DIRECTORY ******
5870 PRINT"□"
5880 PRINT"▣    SEQUENTIAL FILES ON THIS DISK       "
5890 OPEN1,8,0,"$0"
5900 GET#1,A$,B$
5910 GET#1,A$,B$
5920 GET#1,A$,B$
```

```
5930 C=0
5940 IFA$<>""THENC=ASC(A$)
5950 IFB$<>""THENC=C+ASC(B$)*256
5960 GET#1,B$:IFST<>0GOTO6060
5970 IFB$<>CHR$(34)THEN5960
5980 G$=""
5990 GET#1,B$:IFB$<>CHR$(34)THENG$=G$+B$:GOTO5990
6000 GET#1,B$:IFB$=CHR$(32)THEN6000
6010 PRINTTAB(10);:C$=""
6020 C$=C$+B$:GET#1,B$:IFB$<>""THEN6020
6030 IFLEFT$(C$,3)<>"SEQ"THEN5910
6040 PRINT"Q";G$
6050 IFST=0THEN5910
6060 CLOSE1
6070 RETURN
6080 REM***************************
6090 REM SEARCH BY CHEQUE NUMBER
6100 REM***************************
6110 PRINT"♥"
6120 PRINT"▶▶▶▶▶▶RSEARCH FILE BY CHEQUE NUMBER"
6130 PRINT"QQQQQQ▶▶▶▶▶▶ENTER CHEQUE NUMBER TO BE FOUND"
6140 INPUT"▶▶▶▶▶▶▶▶▶▶▶▶▶";CF$
6150 PRINT"QQQ▶▶▶▶▶▶▶▶▶▶▶HARDCOPY (Y/N)"
6160 GETZ$:IFZ$=""THEN6160
6170 IFZ$="Y"THENHC=1
6180 X=0:FORI=1TOCN
6190 IFRIGHT$(N$(I,1),LEN(CF$))=CF$THENX=I
6200 NEXT
6210 IFX>0ANDHC=1THENGOSUB6290
6220 IFX>0ANDHC=0THENGOSUB5630
6230 IFX=0THEN6250
6240 HC=0:GOTO1570
6250 PRINT"QQQQ▶▶▶▶▶▶▶▶▶▶FILE NOT FOUND"
6260 PRINT"QQQQQQQ▶▶▶▶▶▶PRESS ANY KEY TO CONTINUE"
6270 GETZ$:IFZ$=""THEN6270
6280 GOTO1570
6290 Q$=N$(X,3):GOSUB2370:N$(X,3)=Q$
6300 Q$=N$(X,4):GOSUB2370:N$(X,4)=Q$
6310 Q$=N$(X,5):GOSUB2370:N$(X,5)=Q$
6320 OPEN4,4
6330 PRINT#4,N$(X,0)CHR$(16)"20"N$(X,1)CHR$(16)"34"N$(X,2)CHR$(16)"46";
6340 PRINT#4,N$(X,3)CHR$(16)"60"N$(X,4)CHR$(16)"70"N$(X,5)
6350 CLOSE4
6360 RETURN
6370 PRINT"♥"
6380 PRINT"▶▶▶▶▶▶RSEARCH FILE BY CHEQUE DATE  "
6390 PRINT"QQQQQQ▶▶▶▶▶▶▶▶▶ENTER DATE TO BE FOUND"
6400 INPUT"▶▶▶▶▶▶▶▶▶▶▶▶▶";CF$
6410 PRINT"QQQ▶▶▶▶▶▶▶▶▶▶▶HARDCOPY (Y/N)"
6420 GETZ$:IFZ$=""THEN6420
6430 IFZ$="Y"THENHC=1
6440 X=0:FORI=1TOCN
6450 IFRIGHT$(N$(I,2),LEN(CF$))=CF$THENX=I:GOSUB6490
6460 NEXT
6470 IFX=0THENGOTO6530
6480 HC=0:GOTO1570
6490 IFX>0ANDHC=1THENGOSUB6290
6500 IFX>0ANDHC=0THENGOSUB5630
6510 IFX=0THEN6530
6520 RETURN
6530 PRINT"QQQQ▶▶▶▶▶▶▶▶▶▶FILE NOT FOUND"
6540 PRINT"QQQQQQQ▶▶▶▶▶▶PRESS ANY KEY TO CONTINUE"
6550 GETZ$:IFZ$=""THEN6550
6560 GOTO1570
READY.
```

Disable shift key

More useful hints, starting with a routine which disables shifted or CBM graphics characters. The routine sits in the Sprite 11 buffer and when initialised disables the shift key.

Disable shift pattern

The shift key is the only one disabled to start but with a single poke, any combination of shift/CBM/control keys can be disabled by POKEing to location 728:

Shift only	254
CBM only	253
Control only	251
Shift & CBM	252
Shift & Control	250
CBM & Control	249
Shift & CBM & Control	248
None	255

To disable the shift key, SYS704.

To re-enable SYS741 or POKE 728,255.

```
10 I=704:T=0
20 READA:IFA=-1THEN50
30 POKEI,A:I=I+1
40 T=T+A:GOTO20
50 IFT<>4222THENPRINT"■■CHECKSUM ERROR":END
60 IFI<>741THENPRINT"■■NUMBER OF VALUES ERROR":END
70 PRINT"■■■SYS 704 TO ENABLE."
80 PRINT"■■SYS 728 TO DISABLE."
90 END
100 DATA120,169,205,141,143,2,169
110 DATA2,141,144,2,88,96,173
120 DATA141,2,41,254,141,141,2
130 DATA76,72,235,120,169,72,141
140 DATA143,2,169,235,141,144,2
150 DATA88,96,-1
READY.
```

Disk secrets

A couple of useful hints about using the Commodore disk drives. Firstly, thanks to Duncan Gamble of Romik software for the ideas.

Selective directories

It is known that when loading a disk directory you can ask for files that have some sort of pattern matching eg LOAD"$0:TEST*",8 will load in the directory only listing files that start with "TEST".

A useful directory command that is not widely known is the selective file types command which goes like this: LOAD"$*=P",8 which will only show PRG files. The other ones are $*=S (SEQ), $*=R (REL), and $*=U (USR).

```
READY.
═╪═ ▐⊏▌

0 "TEST                " 05 2A
6     "MC-LOAD"          PRG
2     "BAS-LOAD"         PRG
2     "TEST"             SEQ
5     "HILBERT"          SEQ
5     "E100"             SEQ
1     "PASCAL LIST"      PRG
3     "E100.BAS"         PRG<
17    "PASCAL REVIEW"    SEQ<
5     "PROG"             SEQ
6     "PROG.OBJ"         SEQ
51    "E100.PRG"         PRG
4     "CIRCLE.OBJ"       SEQ
50    "CIRCLE.P"         PRG<
501 BLOCKS FREE.
```

Locking Files

On the BBC computer, files can be locked so that they cannot be scratched or saved over unless unlocked. On Commodore disk drives files can be locked to prevent scratching (you can still save over them and then re-lock them).

This is done by setting bit 6 of the file type byte in the directory entry to a one.

Following is a Basic program that will lock a disk file. If you require unlocking it, just change line 840 to 840 V=ASC(FT$)AND191.

When a file has been locked, the directory will show a ' ' character after the file type as follows.

```
10 REM DISK FILE LOCKER BY R.FRANKLIN
20 REM JUNE 1984
30 REM
40 POKE53280,4:POKE53281,2
50 PRINT"▢▤                  ▧DISK FILE LOCKER▩"
60 REM
70 REM GET NAME OF FILE
80 REM
90 PRINT"▩▩▩▩ENTER NAME OF FILE TO BE LOCKED:"
100 INPUTFL$:PRINT:PRINT
110 REM
120 REM CHECK LENGTH IF FILENAME
130 REM
140 IFLEN(FL$)<1ORLEN(FL$)>16THEN50
150 REM
160 REM IF OK, PAD WITH CHAR 160
170 REM
180 IFLEN(FL$)=16THEN300
190 FORI=LEN(FL$)+1TO16:FL$=FL$+CHR$(160):NEXT
200 REM
210 REM GET TYPE OF DISK DRIVE
220 REM
230 PRINT"DRIVE TYPE:"
240 PRINT"▩1..4040,3040,1541,2040"
250 PRINT"▩2..8050,8250▩▩"
260 GETA$
270 IFA$<>"1"ANDA$<>"2"THEN260
280 IFA$="1"THENDT=18:GOTO300
290 DT=35
300 D=0:T1$=CHR$(DT):S1$=CHR$(1)
310 OPEN1,8,15
320 OPEN10,8,10,"#"
330 REM
340 REM READ BLOCK OF DIRECTORY INTO
350 REM BUFFER
360 REM
370 GOSUB1030
380 REM
390 REM POSITION POINTER TO BEGINNING
400 REM
```

```
410 P=0:GOSUB1130
420 REM
430 REM GET NEXT TRACK/SECTOR
440 REM
450 GOSUB980:T2$=A$:GOSUB980:S2$=A$
460 REM
470 REM 8 ENTRIES PER BLOCK
480 REM
490 FORI=0TO7
500 REM
510 REM GET FILE TYPE BYTE
520 REM
530 GOSUB980:FT$=A$
540 REM
550 REM IGNORE FILE POINTER
560 REM
570 GOSUB980:GOSUB980
580 REM
590 REM INPUT FILENAME
600 REM
610 NM$="":FORJ=0TO15:GOSUB980:NM$=NM$+A$:NEXT
620 REM
630 REM IGNORE REST OF ENTRY
640 REM
650 FORJ=0TO10:GOSUB980:NEXT
660 IFI<>7THENGOSUB980:GOSUB980
670 IFFL$=NM$THEN830
680 REM
690 REM NOT REQUIRED FILE
700 REM
710 PRINT"⌉FOUND:"NM$
720 NEXTI
730 T1$=T2$:S1$=S2$
740 REM
750 REM NEXT TRACK=0, END OF DIRECTORY
760 REM
770 IFT1$<>CHR$(0)THEN370
780 PRINT"⌉"FL$" NOT FOUND"
790 GOTO940
800 REM
810 REM FILE FOUND, LOCK IT
820 REM
830 P=I*32+2:GOSUB1130
840 V=ASC(FT$)OR64
850 PRINT#10,CHR$(V);
860 REM
870 REM WRITE BLOCK BACK
880 REM
890 GOSUB1080
900 PRINT"⌉"FL$" LOCKED"
910 REM
```

```
920 REM EXIT PROGRAM
930 REM
940 CLOSE10:CLOSE1:END
950 REM
960 REM GET A SINGLE BYTE FROM BUFFER
970 REM
980 GET#10,A$:IFA$=""THENA$=CHR$(0)
990 RETURN
1000 REM
1010 REM READ A BLOCK INTO BUFFER
1020 REM
1030 PRINT#1,"U1:10,0,"+STR$(DT)","+STR$(ASC(S1$))
1040 RETURN
1050 REM
1060 REM WRITE BUFFER TO DISK
1070 REM
1080 PRINT#1,"U2:10,0,"+STR$(DT)","+STR$(ASC(S1$))
1090 RETURN
1100 REM
1110 REM POSITION BUFFER POINTER
1120 REM
1130 PRINT#1,"B-P:10,"+STR$(P)
1140 RETURN
READY.
```

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Scope for design

Programmer Duncan Gamble casts a critical eye over Audiogenic's Magpie database and the 1541 Express from RAM Electronics, while Sally Wood looks at Scope, the games designer from ISP Marketing

SCOPE

"46 commands at the user's disposal."

Scope is a games designer for the 64, intended to overcome the problems involved in designing a brilliant and original game.

All good arcade games need bright attractive graphics and sprites, exciting sound effects, fast action and of course a detailed knowledge of Machine Code. Unfortunately this is often beyond the average programmers ability, thus creating a market for games designer programs such as Scope.

Scope, marketed and written by ISP, is short for Simple Compilation of Plain Language and is actually a compiler rather than a games designer. ISP have created the new language so that a programmer can type in instructions for a game program using simplified commands (much easier than in Machine Code). When completed, his game will be compiled into Machine Code and then run by means of SYS commands. The finished program will run very quickly because it has been written in Machine Code.

Unfortunately although the commands were sometimes similar to Basic, typing in the lines of a program sometimes became rather awkward and time consuming – every line number had to be followed by a REM statement, semi colons and colons which the following exert from one of their demonstration routines illustrates.

```
5 REM NOTE;ROUTINE TO DIVIDE (X/Y)
10 REM ORG;15500,20000:
20 REM LABEL;A:
30 REM DVAR;A,O:
40 REM VAR;X,7:
```

There are 46 commands at the programmers disposal and these are devoted to the creation of animated graphics, sprites, sounds, colour and music. Scope can only successfully be used to create arcade games because of its emphasis on moving graphics.

It is possible to write an entire program using Scope, but it does have its limitations. The new language used to write the programs seems to have been made so that it can easily be compiled and this is probably the reason it appears to be so primitive compared to Basic.

Despite its limitations, Scope may suit a programmer familiar with Basic who would like to have a go at producing some game sequences.

An added bonus for anyone buying Scope is free membership of the Scope users club. Each member receives a special card enabling him or her free access to a telephone 'hot line' intended to solve all your programming problems.

Product name:
Scope 64
Product:
Games Designer
Company:
ISP Marketing Ltd, Hampstead House, New Town Centre, Basingstoke, Hants. Tel: 01 351 5867
Hardware Requirement:
64, cassette recorder or disk drive
Applications:
Creating a game with graphics, sprites colours, sounds, music and animation
Documentation:
Detailed and comprehensive manual with tape demo routines
Price:
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1541 EXPRESS

– "increases data transfer speed, approximately doubling the transmission rate."

The 1541 single disk drive is a powerful intelligent unit. It is hampered by the speed of the serial bus used to communicate between the drive and the 64.

Serial transmission is inherently slower than parallel transmission of data because only one bit is transmitted at a time as opposed to one byte in 8-bit parallel transmission.

RAM Electronic's 1541 Express cartridge increases data transfer speed, approximately doubling the transmission rate.

In programs which require extensive disk access, the saving in time can be quite appreciable.

The cartridge also redefines the default filing device to disk rather than tape.

Shift/Runstop loads and runs the first program on the disk. Loading the directory can be abbreviated from 10"$",8 to just 10"$, loading a normal program from 10"filename",8 to just 10"filename.

Without the Express cartridge, typing commands on the keyboard while loading and saving is very unreliable and best avoided. With the express cartridge in its fast mode, the keyboard remains fully active and up to 10 characters can be typed in (the length of the keyboard queue).

Loading from and saving to disk is also possible with sprites on the screen.

The cartridge can work in its 'fast' mode or 'slow' mode – slow mode is the normal 1541 speed. While working in fast mode there are limitations on chaining on the serial bus: no extra drives or printers can be attached. In slow mode these limitations are relaxed but some printer interfaces on the serial bus can not be used with the cartridge plugged in at all. The manual mentions the CARD? interface.

Printers connected through the user port are not subject to any of these limitations, neither is the RS 232 interface.

In the manual for the Express cartridge a 'Fast cable' is mentioned which overcomes these restrictions.

The Express cartridge can be switched between fast and slow modes at any time except actually during disk-access, control and f1 or f3 switch to fast and slow mode respectively. This switching was found to be very well implemented. Even using various word-processors and assemblers, which totally take over the machine, the switching was still effective.

The cartridge port is used so no other software in plug-in cartridge form can be used concurrently.

Installation of the Express cartridge requires that the 64 is opened up and two leads from the cartridge be connected to chips on the PCB. These are attached to the CHAREN pin of the 6510 and the Address Enable Control line on U14 – the memory switching chip which controls ROM banking.

Opening up the 64 can void the warranty on it, so RAM Electronics suggest contacting a dealer if in any doubt over installation. This is worthwhile for anyone who is not certain over installation, as connection to the wrong pins could conceivably have very unpleasant results.

The leads end in small sprung clips, so no soldering is required. Once attached, riding eight miles with the 64 in a rucksack was not sufficient to dislodge the leads!

When the 64 powers up with the Express cartridge inserted, the line 'WITH 1541 EXPRESS' appears in white in addition to the usual power-up message. It is at this point that the reason for the two leads becomes obvious. RAM Electronics have cleverly found a way of adding in extra ROM without lessening the available user RAM.

Express uses one of the five buffers in the disk drive in fast mode, two are used by the DOS, leaving only two free for files. Because relative files use two buffers and sequential files one buffer, only one relative file or two sequential files are available at one time.

Because of this use of an extra disk buffer in fast mode, some programs using several files or all three buffers normally available will only work in slow mode: Lode Runner will not work in fast mode, but Jumpman and Infocom adventures will.

Trial and error is the only way of determining whether a piece of software will work normally. If you are using primarily one software package it is worth checking if Express works with it before investing in this cartridge.

MAGPIE

"Magpie's own language resembles Pascal and Cobol, but is very much simpler."

The Magpie database, from Audiogenic, comes in the form of a cartridge and a disk with a well-written manual in a tough ring-bound cover.

Databases allow the efficient storage sorting and retrieval of information, but every user's needs are different so the database must be flexible.

Magpie approaches the problem of flexibility as a language in which the user designs his own databases.

On switching on, after queries as to disk drive and printer type, the user is confronted by a menu of options. Magpie menus are displayed as options in blocks on the screen with the cursor as a line of the menu in reverse field.

When an option is selected which points to another menu, this is displayed overlapping the first menu. It is possible to retrace one's steps as there is always part of the previous menu visible.

Menus are displayed in various colours of varying legibility – white writing on a medium grey background required much tweaking of the colour and contrast controls, even on a colour monitor, to be read.

In the first menu are options to run procedures, use Magpie's calculator and create and use systems stored on disk.

The calculator mode provides a very simple calculator, 26 variables a-z are displayed and used in expressions.

Evaluation of expressions is left to right, and only add, subtract, multiply and divide can be used.

The manual at this point says that the system is very forgiving, but I found that any mistakes or attempts to use functions not supported resulted in the variable being calculated set to zero and no error message being generated. Attempting to find the value of three raised to the power of four gave a result of zero!

Magpie comes with a disk on which are help screens and an example Magpie application.

The help screens are also found in the manual. They can be called from disk at any time without disrupting operation of Magpie.

There are help screens for most Magpie functions but they are usually rewordings of sections of the manual, not always containing the information needed by someone in trouble.

The language that Magpie uses has two fundamental units – the form and the logic to control the forms. Forms are designed on screen. First headings are set up, then fields are associated with headings. Forms can be much larger than the 64 screen, a maximum size of 80 columns by 76 rows approximates to a sheet of A4 paper. The screen scrolls left and right and up and down.

Headings are just typed in at the place on the form required on screen, using the normal 64 cursor controls. When headings have been set up, fields are entered. Up to 26 numeric and 26 alphanumeric fields can be used on a single form and these can be as long as will fit on the form.

As many forms as will fit in memory can be used, with two active at any one time.

Forms are the screen display format of data entry and display. How they are used is controlled by the program written in Magpie's own language. This is a high level language bearing resemblances to Pascal and Cobol in its structuring, but very much simpler.

Magpie builds its main menus from procedure names. Further menus are built from sub-procedures called from within the main procedures. One limitation of these is that they must be defined before the calling procedure in the text. Magpie cannot look ahead for sub-procedures.

The language has commands for assigning any form in memory to be one of the two current forms that can be in use, allowing many forms to be used within an application.

The language has very high level single commands for inputting to all fields in a form, setting up files on disk and updating files.

Repeat/until loop structures are also available, as are powerful disk handling commands for using several drives and devices.

Most commands when writing a Magpie program are entered by finding the command in one of the menus of lists in the Magpie system. Although Magpie has the facility to allow entering text normally for a program, it will not recognise commands typed in in this way.

Its 'enter text' mode is used only for names, messages and certain variable instructions.

Passwords can be requested at any time from the user of an application. A password is entered when an application is created as an overall password, different passwords can then be used to protect sensitive areas of the application.

Magpie has commands for plotting graphs – bar graphs can be plotted horizontally or vertically or points plotted. The graphs are only low resolution character blocks limiting point resolution.

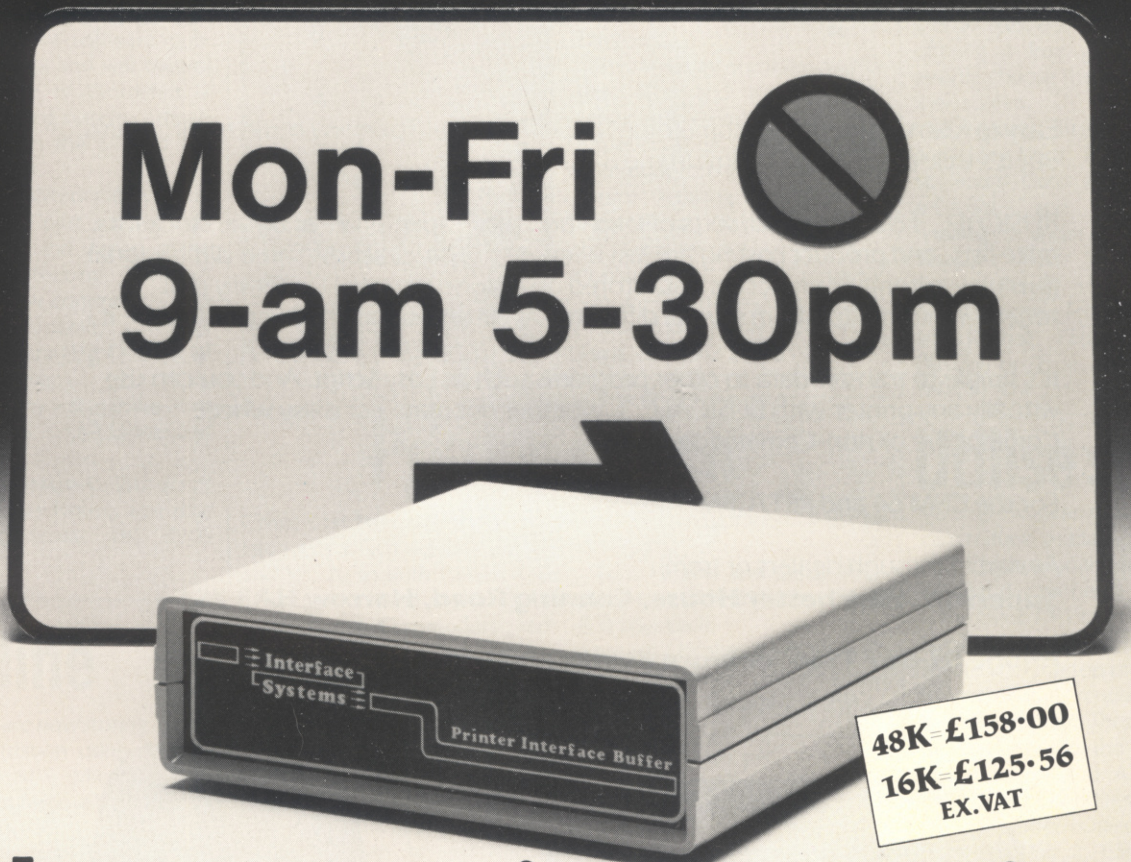
In Magpie, forms for graphs are resident in the system itself so they can be called without having to be defined by the user.

When hard copy is required the printer usually prints exactly what is on the form. Some printers, however, use control codes for underlined or bold text. These are entered when creating a form and are not seen on the screen version.

When using a centronics printer connected through the user port I found it possible to hang Magpie, by switching off the printer, until it was switched on again and printing resumed. If no printer was connected then the only way to regain control was by switching off then on again. Though Magpie's manual does give a warning on this, a timeout or abort printing facility would have been vastly preferable.

Now available on Commodore IEEE.

NO WAITING



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For the CBM 64 and PET/CBM 4000 & 8000 series.

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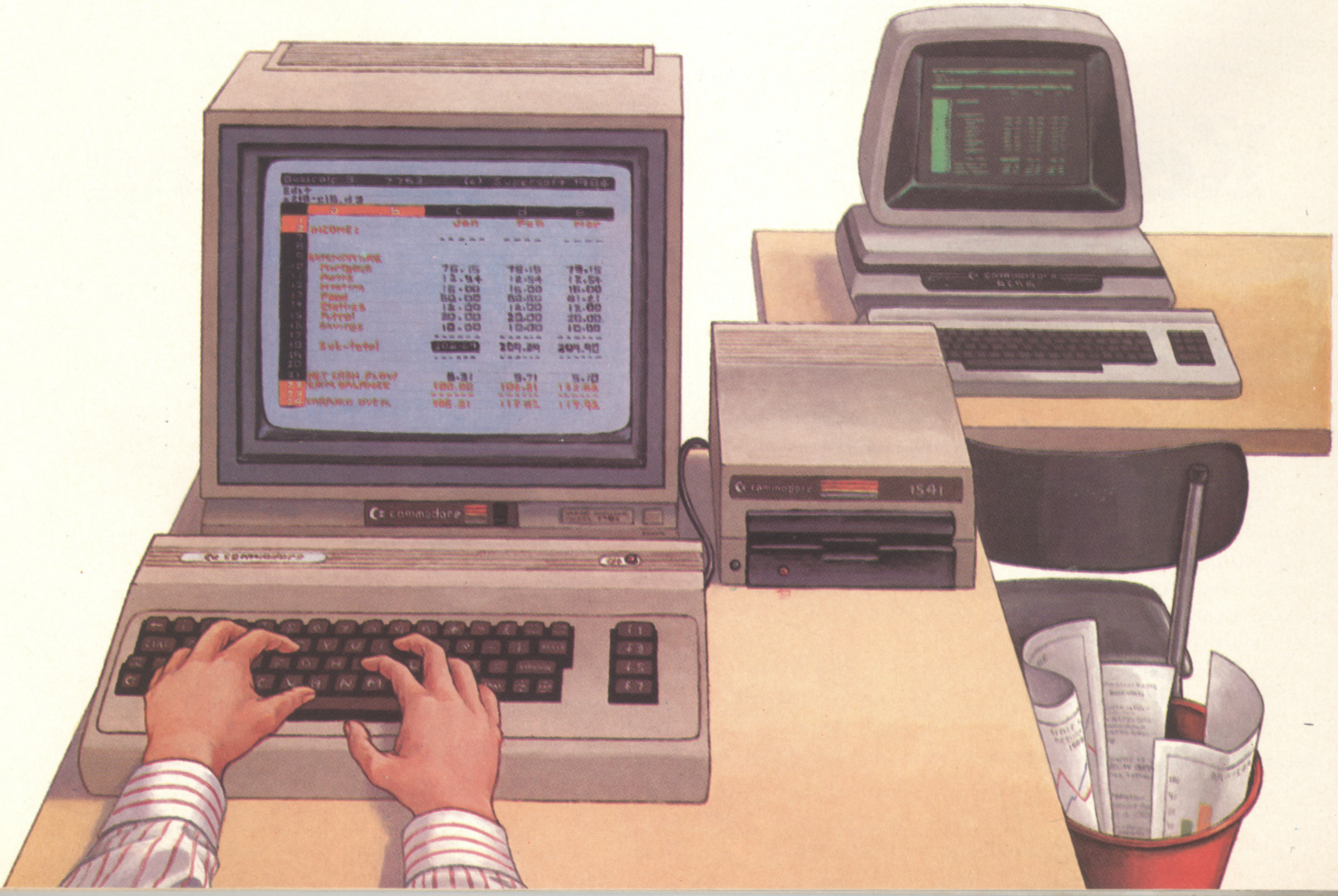


Takeover

Wordcraft Systems, formerly of 43, Farley Road, Derby, has amalgamated with Dataview Ltd and is now known as Dataview Wordcraft Ltd.

The new company will take over Dataview's software publishing interests and will control the marketing of Wordcraft, a word processing system compatible with both the 64 and the portable SX-64.

One of the Wordcraft Systems' most notable past success was the invention and design of the Dongle protection system," which first saw commercial light linked to Wordcraft," said Paul Handover, Managing Director of the new company.

The company will operate from two locations – Colchester and Derby.

Contact: Dataview Wordcraft Ltd, Portreaves House, East Bay, Colchester, Essex. Tel: 0206 869414.

On line

British Rail are now storing a lot of their information using Apstor's (formerly APS Microsystems) Alpha 10, a removable cartridge disk system.

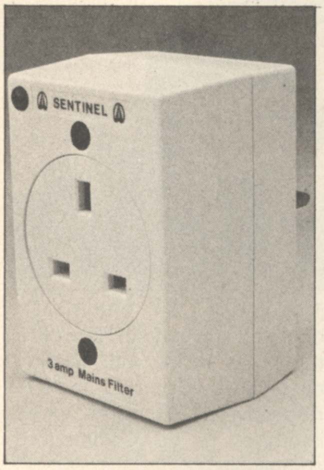
Their first order included five Alpha 10's in a 40 Mbyte configuration which are installed in five separate depots to control parts and schedules.

The disk system combines the qualities of hard disks and floppies with a large memory for data. There are three systems altogether; the Alpha 10 which gives 20 Mbytes of storage, the Beta 5 with 10 Mbytes and the Gamma 20 with 40 Mbytes. They are all compatible with both the Commodore 8000 and 700 series.

Apstors other customers include Borsumij Data Systems, a Dutch company, Courtaulds, Lucas and the Woolwich Building Society.

Contact: Apstor Ltd, Unit 5, Victoria Road Trading Estate, Portslade, Brighton, Sussex. Tel: 0273 422512.

Power on



To combat the problems caused to computer installations by fluctuating mains supply, ACS have introduced a mains filter/surge protector, approved by British Telecom.

This device incorporates a solid-state filter and transient processor and resembles a standard 3-pin mains adaptor. The Commodore compatible 3-amp version retailing at £33 fits in between the mains socket and the computer plus.

Contact: Associated Computer Supplies, Bowmaker House, Etruria Road, Hanley, Stoke-on-Trent. Tel: 0782 287121.

Printer match

Omnitronix have developed two interfaces which will link the 64 and VIC-20 to both Parallel and Serial printers and enable them to print out Commodore and Control characters.

The Parallel printer interface converts CBM ASCII to standard ASCII and two keyboard or software selectable printing modes are available.

In mode one, upper/lower case characters can be printed as graphics with control and graphic characters represented as words and numbers.

Mode two will print upper/lower case characters with control and graphic characters printed as they are. In both modes, the entire Commodore graphics set can be printed.

The Parallel Printer Driver disk or cassette accompanying the Interface has to be configured to the correct printer brand before it will print graphics.

Similarly the Printer driver for Serial RS232 printers will enable Commodore graphics and control characters to be printed. It has the same functions as the Parallel driver.

To print actual graphics, a dot matrix printer with bit map graphics capabilities and the right printer configuration will be necessary.

Both Parallel and Serial interfaces cost $39.95 (£27) + $1.60 (£1) p&p each.

Contact: Omnitronix, PO Box 43, Mercer Island, Washington 98040, USA. Tel: 206 236 2983.

Software registry

Have you lost thousands of pounds of software sales through piracy? A Software Registry scheme has been set-up by TSR, a private company offering legal protection.

If your software is admitted to the scheme, £75 entitles you to five year registration period. You automatically join a copyright legal expenses assurance scheme which provides you with financial assistance to pursue an infringer.

Immediate advantages include a date verification and administration system to assist with establishing and maintaining your software copyright.

Contact: Software Registry Ltd, 57a Lincoln's Inn Fields, London WC2. Tel: 01 430 0798.

Reduce glare

Cave & Tab, manufacturers of two polaroid filters, the CP-70 and the CP-50 costing £105 and £49.50 respectively, are now offering a free guide to help people choose the right filter for their screen.

Anti-glare filters are also available from Romag. Their laminated filters reduce screen reflections and are currently retailing for under £20.

Contacts: Cave & Tab Ltd, 5 Tenter Road, Moulton Park, Northampton. Tel: 0604 47238 and Romag, Patterson Street, Blaydon on Tyne, Tyne & Wear. Tel: 091 414 5511.

Utilise space

VDU terminals arranged on desks can reduce available space, so Eldon have brought out a tray to combat this problem.

The Eldon CRT tray has non-slip hooks and rubber feet which secure it to the top of a terminal leaving enough ventilation space for the computer. These trays can be stacked and the two sizes available, A4 and A3 retail at £11.30 and £12.80 respectively.

Contact: Eldon Office Products (Europe), Unit 3, Clifton Road, Shefford, Bedfordshire.

Maxtech

A range of Winchester disk drives with memory capacities ranging from 70 Mbytes to 1200 Mbytes for the whole range of Commodore computers, including the 8032, 64 and VIC-20, are now available from Maxtech.

Versions for the 16 and Plus/4 are currently being developed. Models vary according to the computer they are connected to, although conversion kits are available for any user who upgrades a processor from one computer to another.

A streaming-tape backup unit can be bought as an optional extra.

Contact: Maxtech Inc, Box 3662, Regina, Canada S4F 3N8.

PRODUCT NEWS

Dr Disk

If Mermaid Software's Doctadisk, a disk repair program, carries out all the functions they claim it does, the frustration and anger caused by corrupt disks will no longer be necessary.

Doctadisk operates with Commodore 1541 disk drives and all D4 format drives. Mermaid say that it can retrieve corrupted data from old, dented or scratched disks, transfer repaired data to a new disk, reformat the new disk, show track and sectors while reading the data, enable the disk to be re-used if not physically damaged and will give a security backup of most disks.

Doctadisk is available on disk for £15.95 including p&p.

Contact: Mermaid Software, 27 Buckingham Gardens, Edgeware, Middlesex. Tel: 01 951 3355.

Tutor

New Generation have made their debut in the software market with The Complete Machine Code Tutor, a program intended to give the Basic programmer a step by step guide to Machine Code.

The package comes with two cassettes containing lessons and exercises and costs £14.95.

A reference manual accompanies the program and a simulator routine takes the user through all aspects of the program before starting the lessons.

Contact: New Generation Software, The Brooklands, 15 Sunnybank, Lyncombe Vale, Bath.

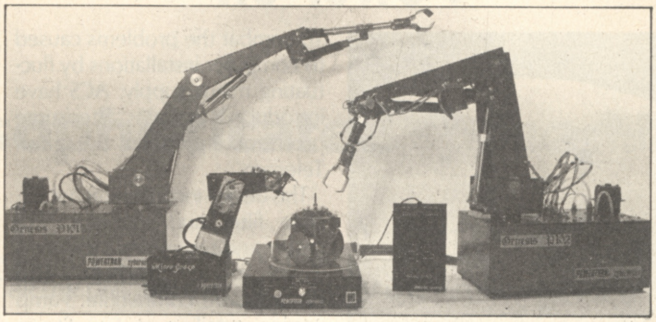
Crystal Zeus

The Zeus Assembler for the 64 from Crystal Computing is now available on cassette for £9.95.

Zeus will include features such as single stroke commands, full screen editors, automatic line numbering and re-numbering.

Contact: Crystal Computing, 125 Smedley Road, Cheetham Hill, Manchester M8. Tel: 061 205 6603.

Gripping



Powertran specialise in providing robotic systems which can be preprogrammed and modified to suit individual projects.

At the top end of the range the Genesis P102, which costs £1,476, features a hydraulically powered revolution arm, two-speed operation, a microprocessor and control box rendering the system totally independent and transportable.

The two other robots, the Micrograsp, an electrically operated arm and the Hebot II, a turtle-type robot with flashing eyes are priced at £272 and £95 respectively. All three need interfaces to be Commodore compatible.

They are available in kit form with assembly instructions and programming tips.

Contact: Powertran Cybernatics Ltd, Portway Industrial Estate, Andover, Hants. Tel: 0264 64455.

Knowledge

Knowledge Index, a cheap, powerful and comprehensive information retrieval service has been set up by Dialog Information Services.

The service is already in operation in the USA and has over 5,000 subscribers including Doctors, librarians, teachers and engineers.

Dr Roger Summit, President of Knowledge Index believes that there is a market in Britain for this type of service because although vast amounts of information exist, "it is very hard to find when you need it!". the purpose of Information Index being to make information easily accessible.

Over 20 databases with 21 million separate items covering journals, books, software packages and government reports are incorporated into the system and topics covered include medicine, agriculture, education, business, computers and electronics.

Dialog claim that the service is fast, powerful and simple to use because it uses simple command processors and doesn't require programming.

A joining fee of £25 entitles the user to two hours free use and thereafter the connect time, which costs £17 an hour, is the only expense. An average search costs from 35p to £2. The service is only available from 6pm to 5am on Sunday to Friday and from 2pm to 5am on Saturdays.

To use the service, subscribers will need a terminal, word processor with a communications option, telecommunications software, a modem and an RS232C interface for the PET, 64 or VIC-20.

Contact: Dialog Information Services, PO Box 8, Abingdon, Oxford. Tel: 0865 730969.

Microsound

Microsound, manufacturers of a 64 key board, will be adding a Digital Music System to their range in October.

This system can record any sound via a microphone and store it in digital form for use with a keyboard as a sound source or for synthesizing.

The package costs about £200 and consists of a piece of hardware with a programmable low-pass filter, input amplifier and a cartridge expansion port connector and software. Sound is stored in 30K of RAM and samples and waveforms can be stored on disk or cassette. The keyboard is not included in the package.

Contact: Autographics Ltd, 3a Reading Road, Henley-on-Thames, Oxon. Tel: 0491 575469.

You Jane

Jane, an integrated software package, is scheduled by Softsel to be available for the 64 in September and will cost £125.30. With the Mouse, an optional extra, the package will cost £206.50.

The three application modules included in the package – Janewrite, the wordprocessor; Janecalc, the spreadsheet and calculator; and Janelist, the file manager and personal filing system, can be used either separately or together.

Contact: Softsel Computer Products, Softsel House, Central Way, Feltham, Middlesex. Tel: 01 844 2040.

Interface

Syscon 6, an interface enabling Commodore peripherals to be used with the BBC micro, could save many educational and government institutions a lot of money as it eliminates the need for new drives and printers. The interface retails at £156+vat.

The 2040, 3040, 4040 and 8050 dual disk drive units can be used as well as the 2022, 2023, 3022, 3023, 4022 and some other Commodore printers.

The Syscon 6 connects to the peripherals via an IEEE488 interface and a manual is supplied with each interface.

Contact: Intelligent Interfaces, 43B Wood Street, Stratford-on-Avon, Warwickshire. Tel: 0789 296879.

Crash repairs

The Super T Plus for the 64 and VIC-20 can restore most reset and crashed programs and reinitialises the 1541 disk drive for $20 (£14).

It is mounted as an extension to the 1541 cable and is attached to the Serial port. Anyone already in possession of The Teser, Super Teser and Teser Mk I, can return these with $5 (£3.57) for a newer version.

Contact: Poseidon International Ltd, 103 Waverly Place, New York 10011. Tel: 212 777 9515.

RAD range

RAD systems are now producing software for the 64 and have a number of titles aimed at both home users and small to medium businesses.

Mailshot 64, an address management system with labels and Flexi-Base 64, a data base program are available on disk or tape for £19.95 and £16.95 respectively. Super-Diary 64, Recipe-Book 64 and Enterprise 64 – an accounting system, all retail at £15.95 for disk and £12.95 for cassette versions.

Manuals accompany all the programs and RAD Systems will explain all their products to potential customers.

Contact: RAD Systems, 17 Devonshire Hill Lane, London N17. Tel: 01 801 5132.

Pixel Pad

Pixel Pads from Peter Bamford are intended to take the hard work out of designing computer graphics.

Each Pad contains a ready made grid together with a summary of graphic programming instructions. In addition to the 8 x 8 user defined grids there are sprite grids and 50 sheets of paper. They retail at £4.95 + £1 p&p.

Contact: Peter Bamford & Co, 10 Barley Mow Passage, Chiswick, London W4. Tel: 01 994 6477.

Sales aid

Selling and promoting goods by technological means is beocming more popular. With Microlex, a software package from Talent Computer Systems, anyone with a 64 will be able to display coloured text with animation and flashing letters on strategically placed monitors.

Talent emphasize that the two main selling points for Microlex are its flexibility and low cost. The complete package costs £275 on disk or cassette, but it can be hired with hardware for about £3 a week.

The display screens can be linked together to form a continuous visual display and the user can compose or edit frames as they are needed. The program is menu-driven and includes a number of features – 16 background and text colours, varied typefaces, characters, symbols and logos and the capacity to hold 60 frames for use in any sequence.

Microlex can drive at least ten monitors and, with boosters, the potential is much more. Talent hope to attract the custom of Retail Stores, Exhibitions, Hotels and House Builders.

Contact: Telent Computer Systems, Curran Building, 101 St James Road, Glasgow. Tel: 041 552 2128.

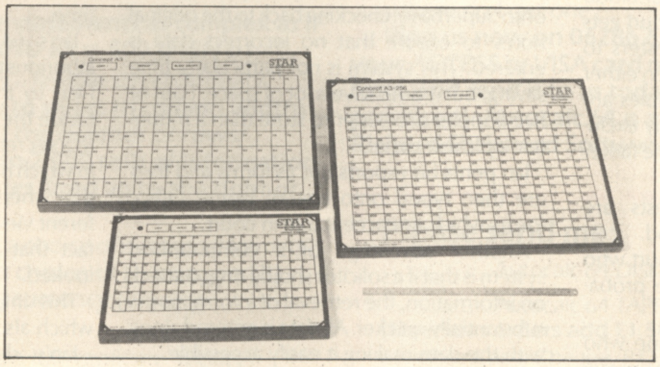
New HQ

Atlantic Software, a UK software supplier specialising in Word Processing and mailing list programs for the VIC-20, have moved to new premises.

The new address is 28 Park Farm Road, Kingston-upon-Thames, Surrey.

Atlantic also provides information on a range of tape and disk-based programs for the unexpanded and expanded VIC-20 plus those for use with the parallel and series interface printers.

Keyboard choice



Concept are offering an alternative to the Commodore keyboard systems – their own input device.

The keyboard offers flexibility to any programmer as any shape, object, word or character can be stuck on the keyboard overlay and assigned to a fixed code.

The pad is covered in touch sensitive cells and three keyboard versions are available. The A4 unit measures 227 x 315 x 25mm, has 16 x 8 matrix with 128 touch cells and two A3 units measure 315 x 435 x 25mm.

The A3-128 has a 16 x 8 matrix with 128 touch cells and the A3-256 is fitted with a 16 x 16 matrix with 256 touch cells.

The keyboard operates with specially written software but at present, educational programs are the only ones available for the PET, 64 and VIC-20, although competent programmers can write their own. A4 pads and A3-256 pads cost £69 and £149 respectively.

Contact: Star Microterminals Ltd, 22 Hyde Street, Winchester, Hampshire. Tel: 0962 51422.

Harness your 64

"Commodore 64 Sound and Graphics" by Peter Falconer, retailing at £6.95 and published by Melbourne House, will suit both the naive and experienced programmer interested in learning more about these subjects.

The book starts with explanations of what the 64's Sound and Graphic capabilities are and then the design and coding of a game are introduced with respect to these two features. Finally machine code routines such as scrolling, a Raster interrupt scheduler and a music routine are shown.

Melbourne House claim that the book will help readers unfamiliar with machine code to gain some competence in "harnessing its power".

Contact: Melbourne House, Castle Yard House, Castle Yard, Richmond. Tel: 01 940 6064.

Wafadrive

Rotronics plan to launch Wafadrive, a new type of storage system, by the end of this year.

Wafadrive will be compatible with the 64, VIC-20 and the new Commodore machines – the 16 and Plus/4 and will retail at £159.95. It features two fast tape drives, each with a 128K storage capacity and will have the same data integrity and performance as a floppy disk.

One wafer or cartridge will be included with the package. There will be three sizes available – 128K, 64K and 16K, priced at £3.95, £3.65 and £3.45 respectively. The smaller wafers sacrifice storage capacity for speed of operation.

Both Centronic and RS232C outputs are included on the Wafadrive as well as a word processing program, although this is only for the 64.

Contact: Rotronics Ltd, Santosh House, Marlborough Trading Estate, West Wycombe Road, High Wycombe, Bucks. Tel: 0494 452757.

64 is good for Guy's

Sue Pearce is admitted to Guy's Hospital, not for major surgery but to discover how the 64 is being used to determine paternity in law suits!

Scientists are reputedly compulsive computer games players and Ian Bradbrook is no exception. Ian, a Lecturer in Forensic Serology (blood), works in the Department of Forensic Medicine at Guy's Hospital. His experience with computers led him to believe that a computer would be extremely useful in storing the masses of data generated in his work.

Guy's Forensic Medicine Department is one of the official Home Office blood testers, carrying out tests to determine paternity in law suits. By law, the court must order blood tests of all parties in affiliation. The court gets in touch with one of the official testers to arrange for blood samples to be taken either at Guy's or at a local GP. Blood samples are then examined to see if there are any exclusions, ie Mr X could not possibly be the father of the child.

If there are any exclusions tests are repeated, preferably with fresh blood.

The results are sent back to the court who then decide whether to accept the probability of Mr Y being the father.

Whereas it is possible to determine who isn't the father, blood tests can only prove that someone belongs to the corresponding blood group – along with X per cent of the population.

Here the computer is invaluable in storing large amounts of information.

The Department of Forensic Medicine originally had a Sharp computer for which Ian wrote his own Basic program. When the 64 was launched Ian converted the program to run on the 64, a decision he has never had cause to regret.

Last year Ian attended the International Commodore Show where Precision Software launched Superbase, a database which was ideal for his needs.

Mounds of paperwork are generated every day. A day-book lists types of tests and people being tested. Information is then transferred to day-sheets which list names of people and which tests they are undergoing. At the end of each week, Ian copies the data onto Superbase, checking back to the original notes to ensure that no incorrect data is entered. This system is not particularly time saving, but it does save a lot of space. Four or five floppies are easier to store than a mountain of loose paper.

Ian prints his reports out as forms and they are then typed onto special Home Office forms which are acceptable in court.

Another advantage of a computerised system is that if a solicitor should ring to check on information, the retrieval of information is substantially quicker. All data is entered along with the date making it easily accessible.

Ian has written a simple program to calculate the frequency of any particular blood group. No longer is it necessary to resort to logarithm tables to determine how many people in the population have a certain blood group. Ian just keys in the blood group and the 64 comes up with the answer.

Superbase is especially useful in the event of a case which has finished with no exclusion and when a second man is cited. Or there are cases with up to four men involved.

Another example where it helps to collate information quickly and accurately is when there is a great deal of money at stake as in the case of inheritance where illegitimate children now hold the same rights.

There are around 90,000 illegitimate births a year in this country – one in every six babies born is illegitimate. Guy's Hospital handle 500 of these cases, a quarter of all in the country. Most cases are now settled out of court.

The Department of Forensic Medicine deals with people from all walks of life. From the famous pop stars (no names mentioned of course!) to the poor 16-year-old girls who discover that they need to know the name of their child's father before they can claim supplementary benefit and have to think back to who they were sleeping with at the time.

Ian's 64 also helps him cope with the laborious task of form filling and letter writing. Due to the nature of these Ian prefers to tackle the task himself rather than handing it to a secretary. He uses Easy Script for the ease in which he can edit a letter. It is often the case that when Ian sees it in writing he gets a different view of the case, sometimes noticing a fact that may have previously been overlooked.

This information is then stored on disk which also saves a lot of office space.

Ian's department also helps the Metropolitan Police with murder investigations, matching blood types and analysing samples. Again the computer speeds up calculations of the percentage of the population with the same blood group.

At present Ian's colleagues are still doing their part of the work manually, but he hopes to eventually put everything on Superbase and buy a daisy-wheel printer for letter quality print outs.

Ian assured us that any data built up over the years which is subsequently used in calculations of the frequencies of blood groups in England is all completely anonymous and that there is no Big Brother syndrome at Guy's Hospital!

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Q: Which spreadsheet sells at a realistic budget price?
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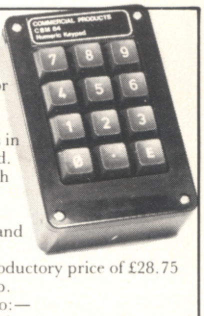

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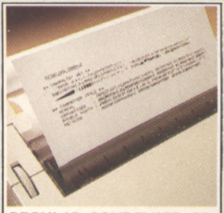
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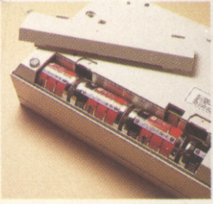
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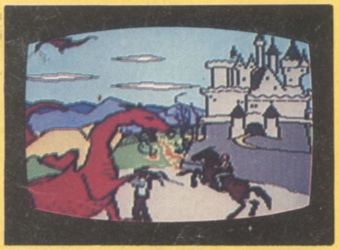

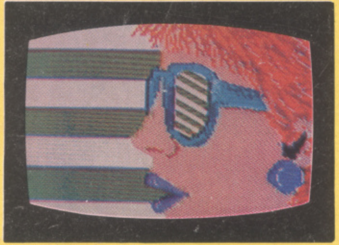

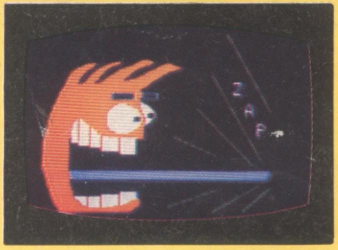

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The program is controlled entirely from the tablet by moving a cursor arrow around to the different menu option. An optional Programmers Guide is also available to tell you how to incorporate Koala Pad pictures into your own programs.

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